EFFECTS OF COOPERATING TEACHERS AND COLLEGE SUPERVISORS ON STUDENT TEACHERS' BELIEFS

By

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CHAPTER I

STATEMENT OF THE PROBLEM

The Problem

The purpose of this study is to investigate the effects cooperating teachers and college supervisors have on interns' beliefs. The major problems involved in this investigation are:

1. What measurable educational and philosophic beliefs and open-closed belief systems are held by student teachers, cooperating teachers, and college supervisors?
2. What satisfaction with student teaching is expressed by the student teachers?
3. What patterns of agreement-disagreement can be found among the beliefs and openmindedness of cooperating teachers, college supervisors, and student teachers?
4. What, if any, changes in interns' beliefs and openmindedness take place over the period of internship?
5. How are the patterns of beliefs and openmindedness which occur between student teachers, cooperating teachers, and college supervisors related to changes in the beliefs and openmindedness of the student teachers?
6. What relationship is there between change in student teacher's beliefs and satisfaction?
7. How do the patterns of agreement-disagreement on beliefs among interns, college supervisors, and cooperating teachers seem to affect the interns' satisfaction with student teaching?

Before these questions can be answered, it is necessary to consider certain prerequisite problems: Can relevant educational and philosophical beliefs be reliably and validly measured? Can students' satisfaction with student teaching be reliably and validly measured? Can the quality of open-closed mindedness (dogmatism) be reliably and validly measured? Such measurement will be necessary to deal with the seven major problems and the following sub-questions:

a. What are the central tendencies and variations in educational and philosophical beliefs of the interns, by pretest and by posttest?

b. What are the central tendencies and variations in satisfaction with internship?

c. What are the central tendencies and variations in open-closed mindedness of the interns in the study, by pretest and posttest?

d. In situations where the beliefs of the cooperating teacher and/or the college supervisor are in substantial conflict with the beliefs of the student teacher, do the student teachers' beliefs tend to move toward or away from the beliefs of their supervisors?

e. In situations where the beliefs of the cooperating teacher and/or the college supervisor are in substantial agreement with the beliefs of the student teacher, do the beliefs of the student teachers tend to move toward or away from the beliefs of their supervisors?

Assumptions of This Study

1. There is order and regularity in our universe of experience which permits treatment by conventions of logic, language, and number to result in intelligible and communicable "knowledge."

2. All people have beliefs and belief systems.

3. Certain dimensions of these beliefs and belief systems can be described in conventional logical and statistical terms by using the three instruments of this study.

Definition of Terms

The following terms are defined for purposes of this study:

1. Student teacher - a student who has completed part or nearly all of his course work in elementary education and is assigned to a public school classroom, under the guidance of the regular teacher of the class and a supervisor representing the university or college, for a period of intensive preparation and teaching. (The abbreviation, "ST," shall denote "student teacher.")
2. Intern - synonymous with "student teacher."
3. Student teaching - the experience of the period of time during which the student works in the public school classroom.
4. Internship - synonymous with "student teaching."
5. Cooperating teacher - the regularly employed public school teacher who is directly responsible for the guidance of the student teaching experience. (The abbreviation, "CT," shall denote "cooperating teacher.")
6. College supervisor - a member of the college or university faculty who works with the cooperating teachers and other public school personnel in providing for and guiding internship experience. (The abbreviation, "CS," shall denote "college supervisor.")

Review and Interpretation of Existing Research

Background of the Problem

"Professional laboratory experience (student teaching) seems to be the area least challenged in teacher education."[1] The education students at the University of Florida give one predominant answer year after year to the question, "What aspects of your college experience helped you the most?" That answer is, "Internship."[2]

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[1] Harold Reynard, "Pre-Service and In-Service Education of Teachers," Review of Educational Research, 33:369-80, October, 1964.

The present study provides evidence as to what happens to students during the student teaching experience. Its instruments (see Chapter II) measure significant beliefs and belief systems. To delineate the "jumping off place" of this research and to provide perspective, there follows a review of related material, with brief discussion.

Related Research

A sizeable group of studies utilize the Minnesota Teacher Attitude Inventory (MTAI) to test the apparent effect of internship, but findings are quite difficult to interpret. In reviewing eleven studies which use the MTAI, White[3] found that two studies provide evidence of improved attitudes attributable to internships, four studies found no significant difference, and five researches report mean attitude score change in a negative direction. When to this conflicting evidence is added the criticism that the MTAI itself is not interpreted in a logically consistent form,[4] helpful interpretation seems very difficult.

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[2] See "Interns' Evaluation of the Undergraduate Program of the College of Education," duplicated, Research Center, College of Education, University of Florida, issues from 1963 through 1966.

[3] Jo Ann White, "Changes During Student Teaching as Measured by Pre-Tests and Post-Tests," Research on Student Teaching (Cedar Falls, Iowa: Association for Student Teaching, 1965).

[4] N. L. Gage, "Logical versus Empirical Scoring Keys: The Case of the MTAI," Journal of Educational Psychology, 48:213-16, 1957; J. W. Getzels and P. W. Jackson, "The Teacher's Personality and Characteristics," Handbook of Research on Teaching, N. L. Gage, editor (Chicago: Rand, McNally and Company, 1963).

The GNC Scale of Logical Consistency of Ideas about Education, on the other hand, was carefully developed, validated, and factor analyzed to measure "logical consistency."[5] Hence its interpretation is, relative to the MTAI, quite lucid. The most revealing study using the GNC Scale reports that 130 undergraduates in teacher education at the University of Georgia enter student teaching with relatively consistent ideas about education, and that "statistically significant losses in consistency after student teaching occurred in the total group and in three sub-groups."[6]

Only one other study utilizing this instrument in a pre- and posttest of student teachers is reported in professional literature. This study found no statistically significant changes attributable to internship.[7]

Price found that student teachers' mean MTAI scores changed in the direction of the mean score of their cooperating teacher. He concluded that "very little is known about student teacher-cooperating teacher relations, and it is strongly recommended that additional research be conducted in this area."[8]

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[5] D. B. Gowin, G. L. Newsome, and K. A. Chandler, "A Scale to Study Logical Consistency of Ideas about Education," _Journal of Psychology_, 51:443-55, 1961.

[6] G. L. Newsome, _et al._, "Changes in Consistency of Educational Ideas Attributable to Student Teachering Experiences," _Journal of Teacher Education_, 41:319-23, 1965.

[7] T. A. Chambliss, "An Evaluation of the Auburn University School of Education Student Teaching Program" (unpublished doctoral dissertation, Auburn University, Auburn, Alabama, 1963). _Dist. Ab._, 24:1085.

[8] R. D. Price, "Relations Between Cooperating Teachers' and Student Teachers' Attitudes and Performances" (unpublished doctoral dissertation, University of Texas, Austin, 1960). _Dist. Ab._, 22:2615.

Corrigan and Griswold found that fifth-year student teachers changed positively in attitude toward three principles of education to the extent that their cooperating schools and cooperating teachers implemented these principles in practice, and according to the influence of the leadership of the college supervisor. Negative attitude change, as measured by the 80-item scale developed by the researchers, was less evident, but seemed due to the same influences. For these New York City subjects, direction and amount of change was related to: grade level, number of placements, and their previous collegiate major.[9]

Vittetoe's reported results seem to indicate that the attitudes of student teachers tend to change positively or negatively according to whether their cooperating teacher was rated "excellent" or "fair."[10]

McAulay found that materials and techniques presented in college methods courses were little used by young teachers, but that student teachers seemed to be " . . . greatly influenced by their cooperating teachers in methods of teaching, techniques of classroom housekeeping, and relationships with children."[11]

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[9] Dean Corrigan and Kenneth Griswold, "Attitude Changes of Student Teachers," _Journal of Educational Research_, 57:93-95, October, 1963.

[10] J. O. Vittetoe, "The Influence of Cooperating Teachers on Attitudes of Student Teachers" (unpublished doctoral dissertation, Pennsylvania State University, 1963). _Dist. Ab._, 24:3223.

[11] J. D. McAulay, "How Much Influence Has a Cooperating Teacher?" _Journal of Teacher Education_, 11:79-81.

Forty-four Indiana University elementary interns were tested before and after internship with the Lipscomb Scale of Teacher Attitudes. Lipscomb concluded, "The close association of student teachers with cooperating teachers tends to produce a similarity of expressed attitudes." The difference between the amount of student teacher attitude change going toward the cooperating teacher's position and that going away was reported as significant at the .0005 level.[12]

A later investigation at Indiana University also treated interns' change on the Lipscomb Scale of Teacher Attitudes as the dependent variable. Goodall attempted to determine whether cooperating teachers' characteristics, as defined by the revised *Ryans Teacher Characteristics Schedule*, affected interns' change on the Lipscomb Attitude Scale. The investigator concluded that intern-cooperating teacher similarities or differences in teacher characteristics appeared to have minimal effect on the student teachers' attitude changes, but that "factors which affect the attitudes of student teachers were not adequately accounted for by the influences examined in this investigation."[13]

Elliott utilized three different Q-Sorts to measure "openness," although no relation empirically or logically, was attempted between these and the most widely known measurement for openness, the D Scale.[14] Two hundred sixty-one student teachers from six Alabama colleges responded before and after the student teaching experience to the appropriate Q-sort. Two hundred six cooperating teachers and nineteen college supervisors responded to the measure of openness. Conclusions were: (1) Significant changes occurred in the openness of the student teachers during their internship. (2) These changes were significantly related to the openness of their cooperating teachers, but not the college supervisors, so that "the more open the cooperating teacher, the more the student teacher lost in openness." (3) High school students perceived their less open student teachers as more empathetic and congruent than their more open student teachers. (4) Student teachers who were initially less open showed significantly less change in openness during student teaching. (5) Student teachers' changes in openness did not occur as a function of the pattern of match between their original level of openness and the openness of their cooperating teachers.[15]

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[12] E. E. Lipscomb, "A Study of the Attitudes of Student Teachers in Elementary Education" (unpublished doctoral dissertation, Indiana University, Bloomington, 1962).

[13] Robert C. Goodall, "The Effects of Selected Teacher Characteristics on the Attitudes of Elementary Student Teachers" (unpublished doctoral dissertation, Indiana University, Bloomington, 1967). *Dist. Ab.*, 26:4024-A.

Stoller, in his report of different methods of supervision at Hunter College, concluded that "neither the method of supervision nor the particular supervisor has as differential an impact on the student teacher as does the combination of cooperating teacher and cooperating class."[16]

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[14] Richard J. Elliott, "Change in Openness of Student Teachers as a Function of Openness of Supervising and Cooperating Teachers" (unpublished doctoral dissertation, University of Alabama, Tuscaloosa, 1964). Dist. Ab., 26:210.

[15] These findings are reported in greater detail in Robert E. Bills, Virginia M. Macagnoni, and Richard J. Elliot, Student Teacher Personality Changes on a Function of the Personalities of Supervising and Cooperating Teachers, final report on Project S-020, U. S. Office of Education Cooperative Research Program, August 31, 1964.

This survey of research will be ended by citing a particular group of studies related to the present. This body of research is reported in part in four unpublished doctoral dissertations,[17] two unpublished papers,[18] and two journal articles.[19] The results of the present research may be related rather directly to the findings of these other studies because the same measuring instruments and the same educational-philosophical theory (experimentalism) are common to them all and to this study.

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[16] Nathan Stoller, "Television for Teacher Education," Changes in Teacher Education: A Reappraisal. Report of NCTEPS Columbus Conference, 1963, Washington, D. C., National Commission on Teacher Education and Professional Standards, National Education Association, 1964, pp. 63-77.

[17] Bob Burton Brown, "The Relationship of Experimentalism to Classroom Practices," University of Wisconsin, Madison, 1962; Avis Calabressa, "The Relationship Between Teacher Beliefs and Classroom Disciplinary Practices," University of Wisconsin, Madison, 1965; George S. S. Chèong, "Relations Among Experimental Attitude, Creativity, School Attitude, Sociometric Status of Fourth-Sixth Grade Pupils," University of Wisconsin, Madison, 1965; Tom Rusk Vickery, "Effects of Empirical Evidence Upon Changes in Personal Consistency of Teachers," University of Florida, Gainesville, 1967.

[18] Bob Burton Brown, "Congruity of the Beliefs and Practices of Student Teachers with Dewey's Philosophy," mimeographed, Gainesville: Teacher Competence Research Project, University of Florida, 11 pp.; Bob Burton Brown and James T. McClave, "Observation and Evaluation of the Classroom Behavior of Student Teachers," mimeographed, Gainesville: Teacher Competence Research Project, University of Florida, 11 pp.

[19] Bob Burton Brown, William Mendenhall, and Robert Beaver, "The Reliability of Observations of Teachers' Classroom Behavior," Journal of Experimental Education, 36:1-10, Spring, 1968; Bob Burton Brown and Tom Rusk Vickery, "The Belief Gap in Teacher Education," Journal of Teacher Education, 18:417-21, Winter, 1967.

Summary and Conclusion

In summary, the research surveyed seems to indicate that internship experiences are such that the central tendencies of the MTAI, the GNC Scale, and of measured openness decline as a result. Cooperating teachers seem to have more influence on student teachers than college supervisors. Perhaps internship is an occasion for "reality shock," where the impact of the realism of the teacher's job upon somewhat romanticized, shallow, and imprecise conceptions of undergraduates of their roles as teachers is manifest.[20]

Insofar as those responsible for teacher education can understand this impact, intelligent control and direction of the student teacher's experience become more possible. This study will further understanding of the effects of the student teaching experience upon the student teacher, for no study utilizing its instruments--the Personal Beliefs Inventory, the Teacher Practices Inventory, and the D Scale--has ever before been conducted relative to the effects of cooperating teachers and college supervisors on student teachers.

Overview of the Study

The investigation of the problem required that the following tasks be undertaken: (1) survey the field of measuring instruments and make selections, (2) collect data under suitable conditions, (3) analyze the data, using appropriate logical and statistical procedures, (4) draw conclusions and implications.

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[20] The concept of "reality shock" in regard to first-year teachers is discussed in Robert L. Turner, _et al._, "Skill in Teaching Assessed on the Criterion of Problem Solving: Three Studies," _Bulletin of the School of Education, Indiana University_, 39:10-15, January, 1963.

The rationale for selection of the instruments comes partly from the survey of research and is further explained under "Instrumentation" (see Chapter II). Criteria for selection of the instruments were: (1) They must measure significant dimensions, (2) They must meet acceptable standards for reliability and validity as measuring instruments, (3) They should offer advantages of lucid interpretation, relative to possible alternative instruments.

The population of the study is the elementary intern teachers from four Florida universities during the period January-May, 1966. Procedures used in this study are explained under the headings of "Research Design," "Data Collection," and "Treatment of Data."

Findings are presented in Chapter III with only those statistics having "confidence levels of .05 or higher" being translated into verbal statements of the inferred relationships, and the final chapter of this report suggests conclusions and implications which follow from the findings.

CHAPTER II

THE RESEARCH DESIGN

Description of Population

The population of this study is the elementary intern teachers from four Florida schools--the University of Florida, the University of South Florida, the University of Miami, and Florida Southern College--for the January-May period of 1966. Nearly all of these student teachers are female. The four schools--two state universities, one large municipal university, and one moderate-sized private college--are a crudely representative sample of student teaching programs as they are often conducted in the state of Florida.

The Research Design

This research was planned to enable measurement of some effects which cooperating teachers and college supervisors have on student teachers' beliefs. In general, the design is a rather clear-cut pretest and posttest procedure, although considerable complexity arises because four different measuring instruments are used so that a complete set of data for only one student teacher-cooperating teacher-college supervisor (ST-CT-CS) "match" consists of thirteen separate questionnaires.

The student teachers responded to the instruments of the study before and after their internship. By subtracting the posttest scores from the pretest scores, any change in a student teacher's beliefs as measured by these instruments could be detected.

The college supervisors (CSs) and the cooperating teachers (CTs) responded to the three basic instruments once. With the belief positions of the CTs and the CSs established by their response to these instruments, it was possible by the procedures of data analysis to determine whether student teachers tended to move toward or away from their supervisors' positions. Thus the central purpose of the study, to investigate the effects CTs and CSs have on interns' beliefs, could be accomplished.

The same design of testing, i.e., pretest and posttest for student teachers and a single response for CTs and CSs, was used for all three basic instruments--The Personal Beliefs Inventory (PBI), The Teacher Practices Inventory (TPI), and The Dogmatism Scale, (D Scale); thus, the same mathematical procedures for data analysis could be applied to each.

No selective placement (pre-matching) of the STs was part of the design. Instead, the matches, i.e., configurations in the ST-CT-CS trios, were identified simply as they occurred and were treated by appropriate categorization, analysis, and discussion.

Instrumentation

This study got its initial impetus from the question, "What determines the nature of the experience a student teacher has?" From the universe of factors possibly determining the nature of a student teacher's experience, it was necessary to choose a manageable number. The factors chosen should reasonably be expected to be relevant, and should be measurable with adequate reliability and validity. Experimental philosophical beliefs, experimental beliefs about teaching practices, the quality of open-closed mindedness, and satisfaction with the student teaching experience were chosen for reasons which now will be explained.

The two measures of experimentalism, the Personal Beliefs Inventory (PBI) and the Teacher Practices Inventory (TPI), were chosen because they are concerned with an explicit and significant system of beliefs: the philosophical-educational theory of experimentalism. This theory is elaborated most prominently in the writings of John Dewey, but other writers are more or less clearly associated with the position, e.g., Kilpatrick, Bode, Hook, Geiger, Stanley, Kelley. Thus when discourse is undertaken relative to Dewey's philosophy, an extensive logical system is readily available for elaboration of immediacies. This permits both precision and efficiency in considerable measure. The system is quite influential in the conduct of the American educational enterprise; even its critics grant that it is the most pervasive of extant philosophies in American schools.[1]

Second, these two measures of experimentalism permit separation of an individual's educational and philosophical beliefs.

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[1] Van Cleve Morris, Philosophy in the American School (Boston: Houghton Mifflin, 1961).

It was reasoned that the ability to make distinction between these two dimensions of belief would be useful toward accomplishing the purposes of the study.

Third, there is an increasing body of empirical research which utilizes the same instruments. Thus the apparent meanings of the instruments in an increasing number of situations are becoming available, and findings of the present study can be rather reliably related to the others, thereby multiplying many times its power of applicability.

A description of the development and validation of the TPI and the PBI is provided by Brown;[2] reliability figures are also given.

For the PBI he reports reliability estimates made in four ways: (1) split-halves, .60, (2) test-retest, .63 - .75, (3) comparable forms, .58, and (4) Hoyt Internal Consistency, .55 - .78.[3] The same four types of reliability coefficients are provided for the TPI: (1) Spearman-Brown split halves, .72, (2) test-retest, . 56 - .62, (3) comparable forms, .69, and (4) internal consistency, .71 - .94.[4]

The D Scale was an outgrowth of work related to the California F Scale. The D Scale is a measurement of the "how" of a person's belief structure, rather than the "what." It measures the extent to which the respondent's belief system is functionally "open" or "closed." For example, persons who score open on this instrument learn to enjoy new musical systems more readily than those who score closed.[5]

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[2] Bob Burton Brown, The Experimental Mind in Education (New York: Harper, 1968).

[3] Ibid., p. 100.

[4] Ibid., p. 101.

The theoretical and empirical work leading to the development and validation of Form E of the D Scale which is utilized in this study is described in the basic writing of Rokeach.[6] Test-retest reliability coefficients ranging from .68 to .93 are also reported.[7]

As does the PBI and TPI, so also the D Scale (also called the Open-Closed Belief System Scale) has an explicit and extensive theoretical and empirical literature on which further development may build. Since development of the D Scale has been from the psychological rather than the philosophical tradition, however to relate the empirical and theoretical considerations of experimentalism and of the D Scale, as this study does to a degree, is to move toward a more general theory.[8]

Each instrument--the PBI, the TPI and the D Scale--has forty items. To each item, the respondent indicates his agreement-disagreement on a six-point scale, from "I agree very much" to "I disagree very much." The scoring procedures are such that a high score indicates agreement with experimentalism (in the case of the PBI and TPI), and openmindedness (in the case of the D Scale).

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[5] Milton Rokeach, *The Open and Closed Mind: Investigations into the Nature of Belief Systems and Personality Systems* (New York: Basic Books, Inc., 1960), Chapter 15.

[6] Rokeach, *The Open and Closed Mind*.

[7] *Ibid*., p. 90.

[8] For a more extensive critical and historical review of the development and meaning of the D Scale, see *The Experimental Mind in Education*, pp. 154-158.

The Satisfaction Inventory (SI) was selected simply because it was the only instrument reported in professional literature which measures satisfaction with student teaching, and which has any sophistication of development. It measures the student teacher's positive or negative affect toward his student teaching experiences.[9]

Copies of the four instruments of this study are in Appendix B.

Data Collection

With the research design established and the decisions made as to which instruments would be used, the next task to undertake in conducting this research was to move toward getting adequate data to answer the questions posed. Operationally, this meant that institutions of higher education which conducted student teaching programs must agree for their students and professional personnel to participate.

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[9] L. P. Aikman and L. M. Ostreicher, Development of an Inventory for Measuring Satisfaction with Student Teaching, Publication No. 22, Office of Research and Evaluation, College of the City of New York, 1954; H. E. Mitzel and L. P. Aikman, Teacher-Pupil Attitudes and Their Relationship to Satisfaction with Student Teaching, Publication No. 20, Office of Research and Evaluation, College of the City of New York, 1954.

Securing such agreement was comparatively easy. When administrative officials were contacted, they seemed willing to further the research and were inclined to have their schools participate. Thus the more realistic dimensions of the population-sample problem became evident: on one hand (a) a need for a large sample to enable statistical treatment which was both valid and easily interpretable; but opposing this, (b) the economic limit of what was reasonable to expend in terms of the investigator's time and subjects' time.

At early stages in the conduct of this research, large numbers of subjects seemed required for reliable statistical analysis. But it was decided that in the absence of definitive information as to how score distributions would fall, and in the absence of definitive information as to the specific statistical procedures to be followed, no completely satisfactory answer as to a reasonable sample size was possible. So by tacit agreement, a sample "as large as practicably possible" was to be obtained, and then all reasonable efforts bent toward extracting the greatest possible amount of useful information from it.

Contact was made with the University of Florida, the University of South Florida, Florida Southern College, and the University of Miami. Florida State University was also approached but it was found that the administration of the internship programs at FSU was rather decentralized. Since decentralization greatly increased the difficulty of getting the STs' questionnaires completed, FSU was not asked to participate in the study. The other four institutions' relative physical proximity facilitated collection of data. When agreement to participate in the research was secured from each of the four institutions, assurances were given that STs, CSs, and CTs would be encouraged to participate.

The way was then clear (1) for group administration of the pretest and posttest to the STs and (2) to securing the CSs' responses. These phases of data gathering proceeded without major incident, with the CSs completing the three instruments at any time in the term, and the group administration of the questionnaire to STs according to the following schedule in 1966:

	Pretest	Posttest
University of Florida	January 10	April 12-14[10]
University of South Florida	January 10	April 14
Florida Southern College	February 22	May 2
University of Miami	January 28	June 3

By far the most difficult phase of data collection was that of getting the CTs' responses. Permission had first to be secured from the superintendent's office in each of sixteen cooperating school systems. It was then necessary for the principal of each cooperating school to grant his permission before contacting the CTs. Finally, each CT was mailed a packet containing the PBI, TPI, and D Scale, a covering letter, and a stamped return envelope. (The four institutions had previously supplied lists with names and addresses of cooperating schools and principals and of the CTS.)

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[10] In the posttest administration, the STs at the University of Florida were given the usual instructions for response, except that they were to complete the instruments outside the group setting, and return them to their CS within the next two days.

In each case--from the deans of the four institutions, through the principals and CTs, to the last intern--participation in the study was optional, although every reasonable encouragement was given. Copies of form letters used are in Appendix A. There were also individually composed letters and telephone calls in which were followed the principles of (1) frank explanation of the nature of the project (although information as to the essential nature of the measuring instruments was not disclosed prior to their being filled out), and (2) recognition of the respondent's option not to participate if he so chose.

Table A is presented to summarize the status of data collection.

TABLE A

OVERVIEW OF DATA COLLECTION

Institution	Potential Number of Data Sets (No. of STs)	Complete Data Sets: CT-ST-CS Trios (13 useable instruments)	
		Number	% of potential
Florida Southern College	26	20	77.0
University of South Florida	93	43	46.3
University of Miami	131	57	42.5
University of Florida	131	61	46.5
Total	381	181	47.4

The figures in Table A pose a question: to what extent are the useable data sets an adequate sample of the population?

As a random sample, it would be quite adequate for most purposes. But the sample is not random. There were two chief sources which contributed to systematic attrition of complete data sets.

These were: (1) refusal of CSs to complete the instrument of the study; (2) refusal of CTs to complete the instruments of the study. These two factors account for perhaps 55 percent of the incomplete data sets. The remaining estimated 45 percent of the incomplete sets is due to causes which could not reasonable be expected to affect materially the results of this study. Essentially random factors--such as a ST's being absent from either the first or last administration of the questionnaire, a blank page (printing error) in one of the thirteen instruments, chance loss of one instrument in the "paper shuffling"--accounted for the attrition of complete data sets above that caused by CT or CS defection.

One factor which does not figure in the attrition of complete useable sets of data is refusal of interns to complete the questionnaires. In the group settings where the interns completed the instruments, the option not to participate was present but by no means emphasized. Probably no more than two or three out of the 381 STs refused to cooperate.

Delimitation of the Problem

The institutional climate and/or the influence of the principal in a cooperating school probably have some effect on student teachers. These effects could not be measured in conducting this research, however, so the results of the study must be seen as so powerful as to over-ride the "noise" which these factors inject.

This research is not designed to assess directly classroom practices, but only such beliefs, belief systems, and satisfaction as the four self-report instruments of the study measure.

It is recognized that socio-economic status and/or "esteem" may be relevant to cooperating teachers' and college supervisors' influence, but such factors are beyond the scope of this study.

Effects of the physical distance or nearness of a cooperating school to the college or university are also beyond the scope of consideration in this research.

Effects of such factors as the dependence-independence disposition of CSs, CTs, and STs are not measured, and cannot be dealt with in this study.

No attempt has been made to assess the general intellectual, social, and/or political climate of the community setting (hence, of the children, parents, and school personnel of a cooperating school). These factors may have some bearing on the nature of the experience a ST undergoes, but treatment of them was not possible in the present research.

Possible influence of the cooperating school's being in a rural or urban setting has not been controlled.

Possible influence of personal trauma (such as death of a close "significant other," or profound physical illness, disaster in one's sex life) on the respondents is in no way controlled.

CHAPTER III

TREATMENT OF DATA AND PRESENTATION OF FINDINGS

This study was planned with seven major problems to guide analysis; these seven questions (see Chapter I) will serve to help organize the presentation of findings in this chapter. Problems one through four call for procedures of data analysis yielding descriptive information. Problems five through seven necessitate statistics which enable the making of inferences. Accordingly, findings will be presented in two sections so that the first deals primarily with description and the last deals primarily with inferred relationships.

Description of the data analyses, which immediately follows, is also subdivided into two parts, one dealing with descriptive and the other with inferential statistics.

Procedures of Data Analysis

Descriptive Statistics

Means and standard deviations were computed on pretest and posttest administrations of the TPI, PBI, and D Scale to student teachers, and on the questionnaires of the college supervisors and the cooperating teachers according to the following groupings:

1. Subjects from Florida Southern College.
2. Subjects from the University of South Florida.
3. Subjects from the University of Miami.
4. Subjects from the University of Florida.
5. Total sample.

Means and standard deviations were also computed on the Satisfaction with Student Teaching Inventory (SI) by institution and by total sample.

To determine whether change took place in student teachers' TPI, PBI, or D Scale scores, t-tests were made, using the formula for correlated samples:

$$t = \frac{M_1 - M_2}{\sqrt{\sigma_{M_1}^{2} + \sigma_{M_2}^{2} - 2r_{12}\sigma_{M_1}^{2}\ M_2}}$$

"in which σ_{M_1} and σ_{M_2} are the standard errors of the initial and final test and r_{12} is the coefficient of correlation between scores made on initial and final tests."[1]

These tests were run for change in PBI, in TPI, and in the D Scale for each of the five groupings. Thus fifteen (3 x 5) tests were made on the sample of 181. To check the adequacy of the sample of 181, fifteen more such correlated-sample t-tests were performed, using the sample of 220.

Inferential Statistics

Two principal techniques--the Mann-Whitney U-test, and multiple linear regression models--were used, as will now be explained.

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[1] Henry E. Garrett, *Statistics in Psychology and Education*, 5th ed. (New York: David McKay Co., 1958), p. 226.

Mann-Whitney U-tests

The Mann-Whitney U-test[2] is the non-parametric equivalent of the t-test. When it became apparent that many of the possible "pairing-effects" to be compared would involve quite small groups, a decision was made to use this statistic. Two hundred sixteen possible "pairing-effects" were identified as will now be explained, under three headings, to outline the logic employed to establish the necessary categories.

Establishing categories according to the subjects, and instruments and instrument scores.--Cutting scores were specified (see Appendix D). Cooperating teachers, college supervisors, and student teachers in "high," "medium," and "low" categories according to TPI, to PBI, and to D Scale were grouped together. Three groups of cooperating teachers were those high, medium, and low on PBI; three more groups of cooperating teachers were those high, medium, and low on TPI; and three more, those H, M, and L on the D Scale. Hence, there are nine different ways (3 x 3) to categorize the cooperating teachers. Similarly, nine groups of college supervisors were identified, and nine groups of student teachers were identified. Diagramatically, the twenty-seven groups may be shown as in Figure A.

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[2] Sidney Siegel, Non-Parametric Statistics (New York: McGraw-Hill, 1956), pp. 116-127.

CTs			CSs			STs		
PBI	TPI	D	PBI	TPI	D	PBI	TPI	D
(1) H	(2) H	(3) H	(1) H	(2) H	(3) H	(1) H	(2) H	(3) H
(4) M	(5) M	(6) M	(4) M	(5) M	(6) M	(4) M	(5) M	(6) M
(7) L	(8) L	(9) L	(7) L	(8) L	(9) L	(7) L	(8) L	(9) L

FIGURE A

ILLUSTRATION OF THE TWENTY-SEVEN GROUPS

These twenty-seven groups provided twenty-seven possible CT-ST pairings and another twenty-seven possible CS-ST pairings, for a total of fifty-four, as may be seen in Figure B. In each HH, LH, *et cetera*, pairing shown, the first letter refers to the supervisors (either CT or CS) and the second letter to the ST, or student teacher.

Matching for determination of pairing-effects.--The study's design allowed the determination of possible effects of these pairings in four ways: student teacher change in PBI, student teacher change in TPI, student teacher change in D Scale, and student teacher score on the SI. Thus there can be measured 216 (four times the fifty-four pairings shown in Figure B) possible pairing effects. This is 108 pairing effects for CT-ST matches, and 108 pairing effects for CS-ST matches.

The labor of identifying the groups representing the 216 possible pairing effects was eased by the use of electronic data processing equipment. The machine was programed to punch a data card representing each case where a student teacher's scores

Supervisor	Matched by PBI	Matched by TPI	Matched by D Scale
CT:	HH	HH	HH
CS:	HH	HH	HH
CT:	HM	HM	HM
CS:	HM	HM	HM
CT:	HL	HL	HL
CS:	HL	HL	HL
CT:	MH	MH	MH
CS:	MH	MH	MH
CT:	MM	MM	MM
CS:	MM	MM	MM
CT:	ML	ML	ML
CS:	ML	ML	ML
CT:	LH	LH	LH
CS:	LH	LH	LH
CT:	LM	LM	LM
CS:	LM	LM	LM
CT:	LL	LL	LL
CS:	LL	LL	LL

FIGURE B

THE POSSIBLE PAIRINGS OF CTs-and-STs,
AND OF CSs-and-STs (TWENTY-SEVEN EACH)

(H, M, or L) on PBI, TPI, or the D Scale came within a defined pattern--HL, HM, HH, ML, MM, MH, LL, LM, and LH--with either her cooperating teacher or her college supervisor on the same instrument. For each case the card was punched with coded information as to the kind of match (whether by PBI, TPI, or D Scale and whether by college supervisor or cooperating teacher), and with the numeric value of the specified criterion score. The criterion scores were: (1) change in PBI, (2) change in TPI, (3) change in D Scale, and (4) SI score.

Then 216 groups of data cards representing the 216 possible pairing effects were assembled. Table B is a frequency distribution of the groups, by size.

TABLE B

NUMBER OF GROUPS BY SIZE

No. of Cases in Group	No. of Groups of This Size
2-6	32
7-12	56
13-18	64
19-24	24
25-30	24
31-36	8
37-42	8

It may be seen in Table B that only 64 (30 per cent) of the groups had nineteen or more cases. For such small groups, distribution-free or non-parametric tests of significance are usually to be preferred. Accordingly, Mann-Whitney U-tests were performed, with the groups arranged as will now be explained.

Pairing-effects compared.--Consider any set of nine groups of pairings, according to one instrument and one criterion. (One example would be the nine groups where student teachers are paired with cooperating teachers according to D Scale scores, with the student teacher's change in TPI score as the criterion variable.) There are nine possible groupings: HH, HM, HL, MH, MM, ML, LH, LM, LL. These nine groupings were compared in nine ways, according to the pattern shown in Figure C.

HH	vs	LH	HM	vs	LM	HL	vs	LL
MH	vs	HH	MM	vs	HM	ML	vs	HL
LH	vs	MH	LM	vs	MM	LL	vs	ML

FIGURE C

TYPES OF COMPARISONS TESTED

Each of these comparisons was tested using the Mann-Whitney procedure[3] to answer a question of the following form:

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[3] Ibid.

> Does it make a difference in their PBI, TPI, D, SI scores whether interns high, low, medium on PBI, TPI, D are placed with CTs, CSs who are high, low, medium on TPI, PBI, D rather than high, medium, low ?

There are 216 possible comparisons on the pattern of Table B; hence 216 U-tests were performed, with each U-test answering a question having the above form.

Two selected examples (there could be 214 different ones with the same form) are:

> Does it make a difference in their D scores whether interns high on D are placed with CTs high on D rather than medium?

> Does it make a difference in their SI scores whether interns medium on PBI are placed with CSs high on PBI rather than medium?

Deficiencies of the U-test procedure

The use of the high, medium, low terminology and the associated divisions of the data into categorical groups (if a person is in one category, he is thereby excluded from any other) have definite shortcomings. This procedure is wasteful of information. Definitions of categories can, even with maximum effort to avoid arbitrariness, result in misleading groupings. For example, on a given questionnaire, a respondent at the twenty-seventh percentile would usually be more nearly like one at the thirty-third percentile than a person at the first percentile of the score distribution. Yet with the present high, medium, low categorization, the first and twenty-seventh percentile scores would always be in the same category (low), and the thirty-third percentile in another (medium).

Other than being wasteful of possibly significant information, the U-test procedure used has another defect. It cannot highlight effects which are really present, but indistinguishable due to the "noise" of complex causation.

Multiple linear regression analyses

Accordingly, a second statistical procedure was employed which could separate the effects of multiple independent variables on a criterion. This procedure also avoids the wastefulness of information and the illogic which has been described in connection with the use of categorical groups in the U-test analysis. The statistical procedure is multiple linear regression[4] and is associated with the devising of "models."

Using this procedure, it was possible to test numerous independent variables to determine which ones statistically account for significant portions of the variance in the specified criterions. Using computing machinery program, "BMD02R, Stepwise Regression,"[5] feats of calculation were available to the investigator which would have been quite impractical without these aids. It is relatively easy to describe in general terms the multiple linear regression models analysis employed in the present research.

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[4] Helen M. Walker and Joseph Lev, "Multiple Regression and Correlation," Statistical Inference (New York: Henry Holt, 1953), pp. 315-347. For more full presentation see William Mendenhall, An Introduction to Linear Models and the Design and Analysis of Experiments (Belmont, California: Wadsworth Pub. Co., 1968).

[5] W. J. Dixon, ed., Biomedical Computor Programs (Los Angeles: University of California Health Sciences Computing Facility, revision of Sept. 1, 1965), pp. 233-257.

As with the U-tests, there were four criterion variables: change in the student teacher's PBI, TPI, and D Scale scores, and SI score. Over a period of time thirty-seven possible independent variables were screened. It was reasoned that each of these could, in a given model, be significant in accounting for variance in the criterion measures. Once a "good" model was developed, its component variables and the statistics they generate could be analyzed to make inferences about the effects of cooperating teachers and college supervisors on student teacher beliefs.

A disadvantage of this method of analysis is that interpretation of its findings is somewhat more difficult, relative to the "High-Low," "High-High" kind of terms and discussion which the previously described U-test procedures allowed. An advantage, however, is that, assuming linearity of relationships, a relatively small sample may yield rich information for relatively reliable analysis.

One mildly complicating factor is that data for all non-categorical variables must be converted, for most meaningful analysis, to standard deviation units, or "$\underline{z}$ scores."

In the present research this was done simply, however, by reading the data into the computor in such a way that the $\underline{z}$ transformation was accomplished for each appropriate input variable before the regression calculations proceeded.

Specifically, the BMDO2R Stepwise Regression[6] source program was altered so that it would accept additional "transgeneration cards." Then the z transformation,

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[6] Ibid.

$$z = \frac{X - \overline{X}}{S.\ D.}$$

was computed for each non-categorical variable's data input prior to the regression calculations' sequence.

Presentation of Findings: Section I, Descriptive Data

Major Problems One and Two

Major problems one and two are concerned with pure description.

1. What measurable educational and philosophic beliefs, and open-closed mindedness are held by student teachers, cooperating teachers, and college supervisors?
2. What satisfaction with student teaching is expressed by student teachers?

Table C and Table D present the findings which answer these questions.

The figures of Table C corroborate the facts cited by previous researchers that student teachers are "caught in the middle" in their beliefs, between college personnel and public school personnel.[7]

It is suggested parenthetically that the datas' "orderly behavior" in this case, i.e., rather exact correspondence to the

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[7] Bob Burton Brown and Tom Rusk Vickery, "The Belief Gap in Teacher Education," Journal of Teacher Education, 18:417-421, Winter, 1967.

TABLE C

CENTRAL TENDENCIES AND VARIATIONS IN PBI, TPI, AND D SCALE

	N	PBI		TPI		D Scale	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
Total Sample							
CSs	26	163.11	24.12	194.09	21.31	170.23	18.08
CTs	220	140.12	17.27	172.57	18.50	154.94	18.46
STs' Pretest	220	149.59	15.08	179.25	15.83	156.94	16.78
STs' Posttest	220	147.75	15.20	178.41	19.17	157.63	19.99
Fla. Southern College							
CSs	1	144.00	--	188.00	--	142.00	--
CTs	20	135.00	15.07	163.50	21.47	154.25	13.27
STs' Pretest	20	146.15	13.08	179.30	16.56	157.70	15.46
STs' Posttest	20	143.00	10.91	176.60	15.26	159.80	18.10
Univ. of S. Florida							
CSs	8	169.12	26.68	186.44	25.76	174.58	21.49
CTs	52	137.08	16.14	172.96	19.56	155.69	16.86
STs' Pretest	52	148.00	14.39	180.44	14.59	158.73	13.17
STs' Posttest	52	147.19	14.69	179.04	15.15	158.29	17.60
Univ. of Miami							
CSs	9	161.24	25.29	194.04	21.58	172.24	16.07
CTs	74	142.20	17.82	173.16	17.98	156.30	19.10
STs' Pretest	74	151.54	15.80	173.80	16.71	156.59	19.37
STs' Posttest	74	147.97	17.12	167.96	18.69	152.62	23.24
Univ. of Florida							
CSs	8	166.62	21.68	202.52	12.21	166.92	16.37
CTs	74	141.58	17.44	174.16	16.60	153.24	19.88
STs' Pretest	74	149.69	15.03	184.84	12.98	155.03	16.41
STs' Posttest	74	149.19	14.21	188.91	17.28	161.59	17.31

TABLE D

CENTRAL TENDENCIES AND VARIATIONS ON THE SATISFACTION INVENTORY

Group	N	Mean	S.D.
Total Sample	220	25.41	5.73
Florida S. College	20	26.75	4.18
Univ. of S. Fla.	51	26.98	4.42
Univ. of Miami	74	25.23	6.07
Univ. of Florida	71	24.10	6.21

larger samples of Brown and Vickery, tends to lend credance to the notion that these data are a representative sample despite their deficiencies in randomness previously cited (see p. 21 of this report).

It is of interest to note the means presented in Table D. The University of Florida apparently has the lowest average "satisfaction with student teaching" among its interns.

Could this be due to a more analytic and less threatened state of mind among the University of Florida interns? This question is posed in the context of the following rationale.

The data gathered by the Satisfaction Inventory are highly skewed, so that the large majority of interns seem to present themselves as being quite "satisfied." Yet if one reads the thirty-two individual items of the SI carefully (see the Satisfaction Inventory, Appendix B), he may well conclude that more measured, analytical (honest?) responses to the items by the student teacher would result in far more individual items being chosen to indicate negative rather than positive evaluations.

The makers of the instrument point out that it measures the respondent's positive or negative affect (not diagnostic information about his student teaching experience). If an intern were both open minded and to a degree critical minded (and data of Table B suggest that such a combination existed, relative to the other schools' STs, among the student teachers of the University of Florida at the time of the posttest), she might well respond to the Satisfaction Inventory on a more reasoning, cognitive basis, rather than from a general, affective response set.

And such analytic, measured responses, it is submitted, might well produce lower SI scores.

Major Problem Three

Major problem three asks, "What patterns of agreement-disagreement can be found among the beliefs and openmindedness of cooperating teachers, college supervisors, and student teachers?" A simple answer is that the twenty-seven patterns specified in column one of Table E can be found. For operational definitions of high, medium, and low designations, see Appendix D.

The rather clearly opposite numbers in columns two and three of Table E constitute further illustration of "the belief gap."[8] It is to be noted that there are many more groupings (top of column two) where CSs are relatively high and many fewer groupings (bottom of column two) where CSs are relatively low. The exact inverse is true of CTs (column three). They are shown to be more numerous in the lower categories of PBI, TPI, and D, and less numerous in the higher categories.

Major Problem Four

Major problem four is, "What, if any, changes in interns' beliefs and openmindedness take place over the period of internship?" This question is answered by two treatments of the data: (1) frequency distributions to indicate the raw pretest to post-test change or lack of change; (2) t-tests to determine the level of confidence one may have that apparent changes are not due to chance.

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[8] *Ibid.*

TABLE E

PATTERNS[a] OF AGREEMENT-DISAGREEMENT IN PBI, TPI, AND D AMONG CTs, CSs, AND STs

Pattern and Instrument	No.[b] of Pairings of CTs and STs in Patterns	No.[c] of Pairings of CTs and STs in Patterns
HH on PBI	19	8
HH on TPI	18	7
HH on D	14	8
HM on PBI	24	10
HM on TPI	41	11
HM on D	33	15
HL on PBI	16	4
HL on TPI	12	5
HL on D	26	15
MH on PBI	14	21
MH on TPI	11	14
MH on D	15	16
MM on PBI	25	18
MM on TPI	17	36
MM on D	17	33
ML on PBI	12	15
ML on TPI	11	11
ML on D	14	29
LH on PBI	9	20
LH on TPI	2	12
LH on D	5	7
LM on PBI	5	30
LM on TPI	6	39
LM on D	10	25
LL on PBI	5	24
LL on TPI	3	20
LL on D	7	18

[a] CT or CS is first "H," "M," or "L"; ST is second H, M, L.

[b] Based on the sample of 181, where all CT, CS, and ST data were available.

[c] Based on the sample of 220, which included thirty-nine for which no CS data were available.

The frequency distributions--Table F, 1-3--present nine categories from "extreme decrease" to "extreme increase." In the middle category, "little or no change," is put each student whose change or lack of it falls within, roughly, ± one S.D. of the mean.

It is of some interest to note in Table F that interns' beliefs at the basic philosophic level appear to be more stable (show less change) than either their beliefs about teaching practices or their dogmatism. This conclusion is drawn from the fact that there are definitely more cases of considerable change (the extremes of the frequency distributions) for TPI and D Scale than for PBI. Perhaps the dimensions of belief measured by the PBI are more nearly what Rokeach calls "primitive beliefs"[9] than are those measured by the TPI or the D Scale.

Table G helps answer major problem four in another way. Table G provides correlations between pretest and posttest administrations to STs of the PBI, TPI, and D Scale. These correlations were used with the means and S.D.'s provided in Table C to compute the t statistic relative to pretest-posttest change in the three instruments. The formula for correlated samples (see page 24) was used.

It was not a central purpose of this study to investigate differential effects of the teacher education institutions on student teachers' beliefs; nevertheless, the data presented in

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[9] Milton Rokeach, The Open and Closed Mind (New York: Basic Books, 1960), p. 40 and passim. See also Rokeach's Beliefs, Attitudes and Values (San Francisco: Jossey-Bass, Inc., 1968), Chapter I.

TABLE F

FREQUENCY DISTRIBUTIONS OF STs' CHANGE

1. STs' CHANGE IN PBI, TOTAL SAMPLE (220)

Score Change		No. of Cases
Extreme Increase	> 27	0
Marked Increase	20 to 26	2
Moderate Increase	13 to 19	18
Mild Increase	6 to 12	37
Little or None	±5 to -5	85
Mild Decrease	-6 to -12	42
Moderate Decrease	-13 to -19	20
Marked Decrease	-20 to -26	15
Extreme Decrease	< -26	1

2. STs' CHANGE IN TPI, TOTAL SAMPLE (220)

Score Change		No. of Cases
Extreme Increase	> 27	5
Marked Increase	20 to 26	9
Moderate Increase	13 to 19	26
Mild Increase	6 to 12	41
Little or None	±5 to -5	57
Mild Decrease	-6 to -12	39
Moderate Decrease	-13 to -19	21
Marked Decrease	-20 to -26	11
Extreme Decrease	< -26	11

3. STs' CHANGE IN D, TOTAL SAMPLE (220)

Score Change		No. of Cases
Extreme Increase	> 26	7
Marked Increase	20 to 26	13
Moderate Increase	13 to 19	24
Mild Increase	6 to 12	43
Little or None	5 to -5	72
Mild Decrease	-6 to -12	28
Moderate Decrease	-13 to -19	11
Marked Decrease	-20 to -26	8
Extreme Decrease	< -26	14

TABLE G

SIGNIFICANCE OF STs' CHANGE

1. STs' CHANGE IN PBI

Grouping	N	r	t
Total Sample	220	.734	2.48[a]
Fla. S. College	20	.753	1.62
U. of S. Fla.	52	.686	.50
U. of Miami	74	.741	2.58[a]
U. of Fla.	74	.753	-4.75[b]

2. STs' CHANGE IN TPI

Grouping	N	r	t
Total Sample	220	.655	.79
Fla. S. College	20	.577	.82
U. of S. Fla.	52	.643	.23
U. of Miami	74	.613	2.65[b]
U. of Fla.	74	.535	-2.32[a]

3. STs' CHANGE IN D

Grouping	N	r	t
Total Sample	220	.667	-.93
Fla. S. College	20	.792	.85
U. of S. Fla.	52	.643	.23
U. of Miami	74	.647	1.87
U. of Fla.	74	.753	-4.75[b]

[a] $p = .02$, two tailed. [b] $p = .01$, two tailed

Table G (and C) pose a provocative question in this regard. This question is, "What accounts for the opposite effect that seems apparent, between the University of Florida and the University of Miami?" Interns at Miami decrease in PBI, TPI, and D, while those at the University of Florida increase. No answer to the question is suggested here.

Only one finding of gross overall change is evident: there apparently is a general tendency among STs to decline in PBI over the period of internship.

The correlations provided in Table G can be considered as test-retest reliability coefficients for the three instruments. As such they are in substantial agreement with the reliability figures already cited (see pages 15-16).

Presentation of Findings: Section II, Inferred Relationships

Major Problems Five through Seven, Introduction

Major problems five through seven, which are closer to the more central purposes of this research and which require analyses beyond the descriptive level, are as follows.

5. How are the patterns of beliefs and openmindedness which occur between student teachers, cooperating teachers, and college supervisors related to changes in the beliefs and openmindedness of the student teachers?

6. What relationship is there between change in student teacher's beliefs and satisfaction?

7. How do the patterns of agreement-disagreement on beliefs among interns, college supervisors, and cooperating teachers seem to affect the interns' satisfaction with student teaching?

The findings which help answer the above problems are presented in the remainder of this chapter, under the headings of "U-test Analyses," and "Multiple Regression Analyses."

U-test Analyses

The identification of the 216 groups has already been explained. (See "Procedures of Data Analysis, Inferential Statistics, Mann-Whitney U-tests," this chapter.) Each of the 216 types of pairings represents a different possible "pairing-effect," i.e., a discrete pattern of match-effect.

The 216 groups were compared to each other in 216 ways, thus necessitating 216 U-tests. This makes possible 216 probabilistic statements as to whether it makes a difference with whom student teachers, who have certain definable parameters of beliefs and belief systems, intern. Such large numbers of tests have a disadvantage: by the operation of chance alone one expects to observe eleven statistics enabling eleven statements of fact "significant at the .05 level."

In standard statistical terminology, this means eleven Type I errors. (Type I errors are those in which an investigator "rejects H_o when it is in fact ~~is~~ true."[10]) In terms of this dissertation's 216 questions of the general form,

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[10] Siegel, *Non-Parametric Statistics*, p. 9.

> Does it make a difference in their PBI, TPI, D, SI scores whether interns high, low, medium on PBI, TPI, D are placed with CTs, CSs who are high, low, medium on TPI, PBI, D rather than high, low, medium ?,

this means eleven answer of "Yes, significant at the .05 level " which should be "No."

Further, chance would provide for an unspecified number of Type II errors. (Type II errors are those in which an investigator "accepts H_o when it is in fact false."[11]) In terms of the 216 questions of this investigation this means an unknown number of "No" answers to the questions which should be "Yes, significant at .05 level."

What then is the value of running so many tests when the outcome is predictably ambiguous?

The tests are a tool to help screen out those pairing-effects which in fact represent effects of cooperating teachers or college supervisors on student teachers' beliefs. By appropriately grouping the findings of the 216 tests, sound bases for intelligent appraisal of the pairing-effects are provided. If the chance factors are kept in mind while we attempt such appraisal, the extensive (216 tests) statistical treatment serves a screening function which is valid.

It is essential that all practical aids of logical and statistical analysis be brought to bear on the problem of determining effects of the supervisors on the student teachers. Hence, the findings of the U-test analysis will be interpreted contrapuntally with more qualitative assessments of the instruments and subjects of this study, and with the multiple regression analyses, to help arrive at reasonable solutions to major problems five through seven.

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[11] *Ibid.*

The complete set of statistics in regard to the U-test analyses are provided in Appendix C, and the findings judged most likely to aid in solving major problems five through seven are provided in Table H.

As has been explained, chance alone would provide eleven cases. Hence, unless other evidence increases our confidence that any of the relationships highlighted by the comparisons are genuine, the eight cases (presented in Table H) screened out cannot be said to indicate other than chance score fluctuation.

"How," it might be asked, "do the findings compare with reasonable expectations?" The investigator's answer would be that a case can be made for the reasonableness of the relationship embodied in all eight screened-out comparisons. Thus pure reason does not at this point provide evidence for accepting any of the eight, although there does not appear to be any strong rationale that any could _not_ represent a genuine relationship.

The last source of evidence for accepting or rejecting any one of the eight highlighted relationships is the corroboration or non-corroboration of them by the multiple regression analyses. Only two of the eight survived this test. Until further evidence should indicate differently, we may accept these two as representing relationships which in fact exist.

TABLE H

THE COMPARISONS OF PAIRING-EFFECTS (FROM 216 COMPARISONS[a]) WHICH REACHED THE .05 CONFIDENCE LEVEL[b]

Pairing is by Score on	ST Matched with	Comparison		No. in Group		Mean Score Change for STs in Group		U^c	$\underline{z}^c$	Dependent Variable
		Grp. 1	Grp. 2	1	2	1	2			
1. PBI	CT	HM vs.	LM	10	30	-5.60	.06	--	1.91	PBI Change
2. PBI	CS	LM vs.	HM	5	24	-9.20	-.08	--	2.20	PBI Change
3. D	CT	HH vs.	MH	8	16	8.25	-8.62	14.5	--	TPI Change
4. TPI	CT	HM vs.	MM	11	36	11.90	-.08	--	1.97	D Change
5. D	CT	HH vs.	MH	8	16	7.50	-12.31	14.5	--	D Change
6. PBI	CS	HM vs.	MM	24	24	23.37	27.37	--	2.04	SI Score
7. PBI	CT	HH vs.	MH	8	20	28.00	21.40	--	2.70	SI Score
8. D	CT	MH vs.	LH	16	7	27.00	22.5	23.5	--	SI Score

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[a] For complete listings of these 216 comparisons, see Appendix C.

[b] No. 7 reached the .01 level, and No.'s 3 and 5 reached the .002 level.

[c] In those instances where one of the groups had twenty or more members, a *z* statistic rather than a *U* statistic was given by the program. These *U* tests were made by using the program described in "Subroutine U TEST," *System/360 Scientific Subroutine Package* (White Plains, N. Y.: IBM Corp., 1967), p. 48.

The specific corroborations are: (1) item 11, Table L (to follow) indicates the same relationship as item 5, Table H; and (2) item 8, Table M (to follow) indicates the same relationship as item 6, Table H.

Thus, two findings are now reported:

> Cooperating teachers who were in the high D Scale category seemed to influence interns who were similarly openminded to increase still further in openmindedness, while CTs who were medium on the D Scale apparently influenced high D Scale student teachers to decrease considerably in openmindedness.
>
> College supervisors who were highly experimental in their philosophic beliefs seemed to influence STs in the medium PBI category to be less satisfied with student teaching, while CSs medium in PBI seemed to influence STs medium in PBI to be more satisfied.

We have at present no way to determine which of the remaining 214 comparisons, if any, are the repositories of relationships which in fact do exist but by chance did not get screened out from the truly non-significant.

Multiple Regression Analyses

Sensitivity, flexibility, and discriminating power are desirable characteristics of multiple regression analysis. Less desirable is the characteristic that findings are more difficult to interpret.

The procedure employed in this investigation was first of all a screening process. Thirty-seven "variables" which have relevance to the purposes of this study were tested. The tests were to determine which variables, and in what combinations, the variables "accounted for the variance" in each of the four criterion measures--change in PBI, TPI, and D Scale, and SI scores. In order to comprehend the discussion which follows, a reader must understand what the input variables are. Since these variables are numerous, an abbreviation is given to each which will be used hereafter in Tables J-M. Table I is a listing of the variables, with their abbreviations. Five types of variables may be noted in the listing, as follows: (1) variables 1-7 are "categorical variables"; (2) 8-10 are self explanatory; (3) 11-16 are effects of agreement-disagreement between the intern and her supervisor; (4) 17-34 are effects of intern-supervisor agreement-disagreement on interns of varying levels of scores on the TPI, PBI, and D Scale; (5) 35-37 are effects of the intern's cognitive organization on the criterion variables.

These thirty-seven variables were run repeatedly on a computor in a long trial-and-error screening process, to result in four final "best models." That is, the computor and the investigator's judgment arrived at the four multiple regression equations which utilize that combination of the above thirty-seven variables which: (1) account for maximum variance in the criterion variables (i.e., has the highest cumulative r); (2) has the lowest standard error of estimate for each of the four criterion measures, for the sample of 181 available to this investigation.

As was explained (see "Procedures of Data Analysis, Inferential Statistics, Multiple Regression Analysis," this chapter) all non-categorical data were transformed to _z_ scores to enable most meaningful interpretation of the statistics generated by the multiple regression calculations.

TABLE I

THE 37 VARIABLES WHICH WERE TESTED FOR ABILITY TO ACCOUNT FOR VARIANCE IN THE FOUR CRITERION MEASURES

	Variable	Abbreviation
1.	Student Teacher's Sex (M or F)	ST'sSex
2.	Cooperating Teacher's Sex	CT'sSex
3.	College Supervisor's Sex	CS'sSex
4.	Grade Level (collapsed to 1-3 and 4-6)	Grade lvl
5.	Institutional effect of University of South Florida	InstSF
6.	Institutional effect of the University of Miami	InstMI
7.	Institutional effect of the University of Florida	InstUF
8.	ST's Pretest PBI	FstPBI
9.	ST's Pretest TPI	FstTPI
10.	ST's Pretest D	FstD
11.	ST's Pretest PBI minus CT's PBI	ST'sB,-CB
12.	ST's Pretest PBI minus CS's PBI	ST'sB,-SB
13.	ST's Pretest TPI minus CT's TPI	ST'sP,-CP
14.	ST's Pretest TPI minus CS's TPI	ST'sP,-SP
15.	ST's Pretest D minus CT's D	ST'sD,-CD
16.	ST's Pretest D minus CS's D	ST'sD,-SD

TABLE I (continued)

Variable	Abbreviation
17. Effect of "ST'sB,-CB" on STs who have different PBI Scores	B-CBxB
18. Effect of "ST'sB,-CB" on STs who have different TPI Scores	B-CBxP
19. Effect of "ST'sB,-CB" on STs who have different D Scores	B-CBxD
20. Effect of "ST'sB,-SB" on STs who have different PBI Scores	B-SBxB
21. Effect of "ST'sB,-SB" on STs who have different TPI Scores	B-SBxP
22. Effect of "ST'sB,-SB" on STs who have different D Scores	B-SBxD
23. Effect of "ST'sP,-CP" on STs who have different PBI Scores	P-CPxB
24. Effect of "ST'sP,-CP" on STs who have different TPI Scores	P-CPxP
25. Effect of "ST'sP,-CP" on STs who have different D Scores	P-CPxD
26. Effect of "ST'sP,-SP" on STs who have different PBI Scores	P-SPxB
27. Effect of "ST'sP,-SP" on STs who have different TPI Scores	P-SPxP
28. Effect of "ST'sP,-SP" on STs who have different D Scores	P-SPxD
29. Effect of "ST'sD,-CS" on STs who have different PBI Scores	D-CDxB
30. Effect of "ST'sD,-CD" on STs who have different TPI Scores	D-CDxP

TABLE I (continued)

Variable	Abbreviation
31. Effect of "ST'sD,-CD" on STs who have different D Scores	D-CDxD
32. Effect of "ST'sD,-SD" on STs who have different PBI Scores	D-SDxB
33. Effect of "ST'sD,-SD" on STs who have different TPI Scores	D-SDxP
34. Effect of "ST'sD,-SD" on STs who have different D Scores	D-SDxD
35. ST's Cognitive Structure: Effect of Combination of ST's D and ST's PBI Score	FstD x FstB
36. ST's Cognitive Structure: Effect of Combination of ST's TPI Score and ST's D Score	FstD x FstP
37. ST's Cognitive Structure: Effect of Combination of ST's TPI Score and ST's PBI Score	FstP x FstB

A check was made of the legitimacy of thus altering the input data. This was, done by running the four best models with input data in raw score form. The results were that the two criteria for a good model remained precisely the same: (1) the total variance accounted for by the model (cumulative r) was the same for both z score and raw score data input; (2) the standard error of estimate was lowest for the same steps in the program output for both z score and raw score data input.

The statistics of the four best models for accounting for variance in the four criterion variables are presented in Tables J through M. (Unless specified otherwise, all numbers presented were generated by computations utilizing z score data input.)

Before presenting verbal statements of fact drawn from Tables J-M, explanation needs to be made regarding interpretation of the statistics of the models.

As has been noted, each of the four models is the end result of a long series of computations. The aim, in each of the four cases, was to identify that combination of input variables which would account for the greatest amount of variance in the criterion (either change in PBI, TPI, or D Scale, or SI score), and would have (in combination, in a model or multiple regression equation) the lowest standard error of estimate.

Having arrived at the four best multiple regression equations, the next task was to interpret them. Output statistics were used in specific ways to make verbal statements reflecting relationships which were inferred to exist.

TABLE J

THE MODEL (FROM 37 POSSIBLE INPUT VARIABLES) WHICH BEST ACCOUNTS FOR THE VARIANCE IN THE STs' PBI CHANGE, WITH THIS STUDY'S SAMPLE OF 181 ST-CT-CS TRIOS

Multiple r = .5385, multiple r^2 = .2900
Std. Error of Estimate: with *z* score input, 0.8801
with raw score input, 9.3578

Analysis of Variance for this 15-variable Model

	df	Sum of Squares	Mean Square	F	Sig.
Regression	15	52.20	3.48	4.49	.005
Residual	165	127.80	0.78		

(Constant: .05)

Variable	Coefficient	F	Sig.[a]
1. Grade lvl	0.10	1.99	ns
2. InstSF	-0.28	4.73	.05
3. FstPBI	0.87	1.10	ns
4. FstTPI[b]	1.57	2.75	see 13
5. FstD[b]	1.34	2.01	see 10
6. ST'sB,-CB[b]	1.55	5.19	see 10
7. ST'sB,-SB	-1.24	2.18	ns
8. ST'sD,-SD[b]	-1.89	2.78	see 13
9. B-SBxB	0.78	1.54	ns
10. B-CBxD	-1.42	4.31	.05
11. B-SBxD	0.64	0.73	ns
12. D-SDxD	-1.13	2.79	ns
13. D-SDxP	2.79	6.95	.01
14. ST'sD x ST'sP	-1.75	1.64	ns
15. ST'sB x ST'sP	-0.93	0.56	ns

[a] Levels of significance for each variable were determined using 1 and 165 df.

[b] For these "main effect" variables substantive meanings are interpreted in conjunction with the other variable of the "interaction variable" in which two main effects occur; probability statements are based on the F value of the interaction variables.

TABLE K

THE MODEL (FROM 37 POSSIBLE INPUT VARIABLES) WHICH BEST ACCOUNTS FOR THE VARIANCE IN THE STs' TPI CHANGE, WITH THIS STUDY'S SAMPLE OF 181 ST-CT-CS TRIOS

Multiple r = 0.6140, multiple r^2 = 0.3770
Std. Error of Estimate: with z score input, 0.8579
with raw score input, 12.2879

Analysis of Variance for this 24-variable Model

	df	Sum of Squares	Mean Square	F	Sig.
Regression	24	67.847	2.827	3.933	.005
Residual	156	112.143	0.719		

(Constant: 0.12)

Variable	Coefficient	F	Sig.[a]
1. ST'sSex	-0.20	1.40	ns
2. CT'sSex	0.15	0.81	ns
3. CS'sSex	-0.13	2.13	ns
4. Grade lvl	0.08	1.10	ns
5. InstSF	-0.17	1.20	ns
6. InstMI	0.57	19.09	.005
7. InstUF	-0.57	20.92	.005
8. FstPBI[b]	4.86	13.70	see 16, 18, 24
9. FstTPI[b]	4.51	14.51	see 21, 24
10. FstD[b]	-0.66	0.62	see 17
11. ST'sB,-SB[b]	-0.16	0.02	see 16
12. ST'sP,-CP[b]	-2.10	6.08	see 21
13. ST'sP,-SP[b]	-2.14	2.55	see 18
14. ST'sD,-CD	-1.01	1.84	ns
15. ST'sD,-SD[b]	1.51	5.51	see 17
16. B-SBxB	-1.72	6.02	.025
17. D-SDxD	-1.53	6.19	.025
18. P-SPxB	3.50	10.53	.005
19. D-CDxB	0.89	1.48	ns
20. B-SBxP	2.03	3.27	ns
21. P-CPxP	2.17	6.40	.025
22. P-SPxP	-1.35	1.72	ns
23. FstD x FstP	1.07	0.81	ns
24. FstP x FstB	-7.58	15.14	.005

[a] Using 1 and 156 df.

[b] For these "main effect" variables, substantive meanings are interpreted in conjunction with the other variable of the "interaction variable(s)" in which two main effects occur; probability statements are based on the F value of the interaction variables.

TABLE L

THE MODEL (FROM 37 POSSIBLE INPUT VARIABLES) WHICH BEST ACCOUNTS FOR THE VARIANCE IN THE STs' D SCALE CHANGE, WITH THIS STUDY'S SAMPLE OF 181 ST-CT-CS TRIOS

Multiple r = .5090, multiple r^2 = .2590
Std. Error of Estimate: with *z* score input, .8991
with raw score input, 13.5221

Analysis of Variance for this 15-variable Model

	df	Sum of Squares	Mean Square	F	Sig.
Regression	15	46.628	3.109	3.846	.005
Residual	165	133.377	0.808		

(Constant: 0.36)

Variable	Coefficient	F	Sig.[a]
1. ST'sSex	-0.32	3.37	ns
2. CS'sSex	-0.14	3.43	ns
3. Grade lvl	0.11	2.28	ns
4. InstMI	0.36	8.65	.005
5. InstUF	-0.40	10.26	.005
6. FstPBI	-0.14	2.03	ns
7. FstTPI	-0.07	0.48	ns
8. FstD	0.27	5.40	.025
9. ST'sB,-CB	-0.03	0.00	ns
10. ST'sP,-SP	-0.72	1.32	ns
11. ST'sP,-CD	1.80	4.14	.05
12. B-CBxB	1.29	2.83	ns
13. B-CBxD	-1.25	2.58	ns
14. P-SPxD	0.64	1.08	ns
15. D-CDxP	-1.64	3.49	ns

[a] Using 1 and 165 df.

TABLE M

THE MODEL (FROM 37 POSSIBLE INPUT VARIABLES) WHICH BEST ACCOUNTS FOR THE VARIANCE IN THE STs' SI SCORE, WITH THIS STUDY'S SAMPLE OF 181 ST-CT-CS TRIOS

Multiple r = .4553, multiple r^2 = .2073
Std. Error of Estimate: with *z* score input, .9328
with raw score input, 5.4972

Analysis of Variance for this 16-variable Model

	df	Sum of Squares	Mean Square	F	Sig.
Regression	16	37.318	2.332	2.681	.005
Residual	164	142.684	0.870		

(Constant: .33)

Variable	Coefficient	F	Sig.[a]
1. ST'sSex	-0.33	3.80	ns
2. InstSF	0.19	2.04	ns
3. InstUF	-0.24	3.42	ns
4. FstPBI[b]	-1.76	4.79	see 12
5. FstTPI[b]	1.93	3.88	see 13 and 16
6. FstD[b]	0.68	0.28	see 16
7. ST'sB,-CB[b]	3.28	7.29	see 13
8. ST'sB,-SB	0.23	3.81	ns
9. ST'sP,-SP[b]	-2.11	5.79	see 12
10. ST'sD,-CD	-1.91	1.99	ns
11. B-CBxB	-1.26	2.66	ns
12. P-SPxB	1.97	5.43	.025
13. B-CBxP	-2.09	3.98	.05
14. D-CDxP	1.79	1.79	ns
15. FstD x FstB	2.79	3.88	ns
16. FstD x FstP	-3.35	3.98	.05

[a] Using 1 and 164 df.

[b] For these "main effect" variables, substantive meanings are interpreted in conjunction with the other variable of the "interaction variable(s)" in which they occur; probability statements are based on the F value of the interaction variables.

Appendix E contains the raw data of this study. Tables J through M have presented the statistics which warrant the statements of fact which are possible from the multiple regression analyses of this study. Any reader who wishes to understand more fully how to bridge the gap between the statistics and the making of the statements is referred to Mendenhall's Linear Models.[12]

The four models account for from 20.7 per cent of a criterion's variance (SI score; see Table M) to 37.7 per cent (TPI change; see Table K). Thus, the models allow probabilistic statements as to significant trends, although they do not predict majorities of the criterions' variances.

Since the specific statistics of the models would certainly change with another sample, it is desirable to make statements of fact which are meaningful in reflecting the findings of this study, yet do not connote a precision of measurement which does not in fact exist. Accordingly, adjectives and adverbs having reasonably clear semantic weight, but not implying a (false) mathematical precision, will be used, following the definitions of Table N.

These adjectives and adverbs are not to be interpreted as expressing the degree of certainty of existence of a relationship; they are not probability statements. Instead, they refer to ratios of relationship or more specifically to the "coefficients of slope" which were obtained for non-categorical variables. The

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[12] William Mendenhall, An Introduction to Linear Models and and the Design and Analysis of Experiments (Belmont, California: Wadsworth Pub. Co., 1968).

TABLE N

ADJECTIVES AND ADVERBS USED TO INDICATE THE DEGREE OF RELATIONSHIP ASSOCIATED WITH NON-CATEGORICAL VARIABLES

"Slope Coefficients," from the Regression Models (Tables J-M)	Adjectives and Adverbs
.00 to ± .50	little or none - no
± .51 to ± 1.00	slight - slightly
±1.01 to ± 2.00	mild - mildly
±2.01 to ± 3.50	moderate - moderately
±3.51 to ± 7.50	strong - strongly
±7.51 to ±15.00	very strong - very strongly
±15.00	extreme - extremely

adjective or adverb will answer questions similar to, "As change takes place in a variable which accounts for variance in a criterion, does the criterion change mildly, moderately, strongly, or how?" The modifying words defined in Table N will be used hereafter in this text to give meaningful but not inappropriately precise answers.

Chance factors yield Type I and Type II errors in the regression analyses,[13] as well aswithinthe U-test analyses. Accordingly, judgements were made to ameliorate these errors. The rationale followed for acceptance or exclusion of each relationship screened out by the multiple regression procedure is outlined on pages 68-70.

Of the seventy main effect and interaction variables which in their combinations constituted the four models, thirty-three had F statistics meeting the .05 probability criterion. Of these thirty-three, two interaction variables (which included main effects) were judged to be false positives or Type I errors. These two indicated relationships, which were judged spurious, are not included in this chapter but are to be found in Appendix F, along with six statements of certain relationships which might have been asserted to be genuine on the basis of their U statistic but which were also judged to be Type I errors.

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[13] *Ibid.*, p. 22.

Effect of college supervisors and cooperating teachers on interns' experimental philosophic beliefs

The effects of CSs whose D Score either exceeds or is less than their ST's pretest D are as follows:

a. on STs at the mean on TPI pretest: as CSs exceeded these STs' pretest D Scale scores, the CSs apparently caused a mild tendency in the STs to decrease in PBI during internship; or equivalently, to the extent that CSs' D Scale scores were less than these STs' pretest D Scale scores, the CSs apparently caused a mild tendency to increase in PBI;

b. on STs at two S.D.'s above the pretest TPI mean: as CSs exceeded their STs' pretest D Scale scores they apparently caused a strong tendency in the STs to increase in PBI during internship; or equivalently, to the extent that the CSs' D Scale scores were less than these STs' pretest D Scale scores, the CSs apparently caused a strong tendency to decrease in PBI;

c. on STs at two S.D.'s below the TPI pretest mean: as CSs exceeded these STs' pretest D Scale scores, the CSs apparently caused a strong tendency among the STs to decrease in PBI during internship; or equivalently, to the extent the CSs were lower on D Scale than the STs' pretest D Scale scores, the CSs apparently caused a strong tendency to increase in PBI.

To outline the above relationships more sharply, we might say: Over the internship period, STs high in TPI tended strongly to move up or down in PBI directly as their CSs were more or less openminded than they, while STs quite low on TPI tended strongly to move up or down in PBI inversely as their CSs were more or less openminded than they. (From item 13, Table J.)

Effects of cooperating teachers and college supervisors on interns' experimental beliefs about teaching practices

1. The effects of CSs whose D Scale score either exceeds or is less than their ST's pretest D Scale are as follows:

a. on STs at the mean on D Scale pretest: as CSs exceeded these STs' pretest D Scale scores, the CSs apparently caused a mild tendency in the STs to increase in TPI during internship; or equivalently, to the extent that CSs' D Scale scores were less than these STs' pretest D Scale scores, the CSs apparently caused a mild tendency to decrease in TPI;

b. on STs at two S.D.'s above the pretest D Scale mean: as CSs exceeded their STs' pretest D Scale scores they apparently caused a mild tendency in the STs to decrease in TPI during internship; or equivalently, to the extent that the CSs' D Scale scores were less than these STs' pretest D Scale scores, the CSs apparently caused a mild tendency to increase in TPI;

c. on STs at two S.D.'s below the D Scale pretest mean: as CSs exceeded these STs' pretest D Scale scores, the CSs apparently caused a strong tendency among the STs to increase in TPI during internship; or equivalently, to the extent the CSs were lower on D Scale than the STs' pretest D Scale score the CSs apparently caused a strong tendency to decrease in TPI.

To state the above relationships in another way, we might say: Over the internship period, highly openminded STs tended mildly to change in TPI inversely as their CSs were more or less open than they, while highly closed minded STs tended strongly to change in TPI directly as their CSs were more or less open than they. (From item 17, Table K.)

2. The effects of CSs whose TPI score either exceeds or is less than their pretest TPI are as follows:

   a. on STs at the mean on PBI pretest: as CSs exceeded these STs' pretest TPI scores, the CSs apparently caused a moderate tendency in the STs to decrease in TPI during internship; or equivalently, to the extent that CS' TPI scores were less than these STs' pretest TPI scores, the CSs apparently caused a moderate tendency to increase in TPI;

b. on STs at two S.D.'s above the pretest PBI mean: as CSs exceeded their STs' pretest TPI scores they apparently caused a strong tendency in the STs to increase in TPI during internship; or equivalently, to the extent that the CSs' TPI scores were less than these STs' pretest TPI scores the CSs apparently caused a strong tendency to decrease in TPI;

c. on STs at two S.D.'s below the PBI pretest mean: as CSs exceeded these STs' pretest TPI scores, the CSs apparently caused a very strong tendency among the STs to decrease in TPI during internship; or equivalently, to the extent the CSs were lower on TPI than the STs' pretest TPI score the CSs apparently caused a very strong tendency to increase in TPI.

To outline the above relationships more sharply, we might say: Over the internship period, STs high in PBI tended strongly to gravitate toward their CSs' TPI positions, while STs quite low in PBI tended very strongly to reject their CSs' TPI positions relative to their own. (From item 18, Table K.)

3. The effects of CTs whose TPI score either exceeds or is less than their ST's pretest TPI are as follows:

   a. on STs at the mean on TPI pretest: as CTs exceeded these STs' pretest TPI scores, the CTs apparently caused a moderate tendency in the STs to decrease in TPI during internship; or equivalently, to the extent that CTs' TPI scores were less than these STs' pretest TPI scores, the CTs apparently caused a moderate tendency to increase in TPI;

   b. on STs at two S.D.'s above the pretest TPI mean: as CTs exceeded their STs' pretest TPI scores they apparently caused a moderate tendency in the STs to increase in TPI during internship; or equivalently, to the extent that the CTs' TPI scores were less than these STs' pretest TPI scores the CTs apparently caused a moderate tendency to decrease in TPI;

   c. on STs at two S.D.'s below the TPI pretest mean: as CTs exceeded these STs' pretest TPI scores, the CTs apparently caused a strong tendency among the STs to decrease in TPI during internship; or equivalently, to the extent the CTs were lower on TPI than the STs' pretest TPI scores the CTs apparently caused a strong tendency to increase in TPI.

To outline the above relationships more sharply, we might say: Over the internship period, highly TPI STs tended moderately to gravitate toward their CTs' TPI positions, while STs quite low in TPI tended strongly to reject their CTs' TPI positions relative to their own. (From item 21, Table K.)

Effect of cooperating teachers on interns' open-closed mindedness

There was a mild tendency for CTs to influence STs' open-mindedness directly; that is, as CTs were higher on D than their STs' pretest D, there was a mild tendency for the STs to increase in D, and vice versa.[14] (From item 11, Table L.)

Effects of cooperating teachers and college supervisors on interns' Satisfaction with Internship

1. In general, CTs influenced STs moderately to be more satisfied to the extent that they were lower than the STs on the PBI. But this finding must be interpreted in conjunction with the degree of the student teacher's experimental beliefs about teacher practices, as follows: high TPI STs showed a mild tendency to be less satisfied to the extent that their CTs were lower than themselves on the PBI, while low TPI STs showed a strong tendency to be more satisfied to the extent that their CTs were lower than themselves on the PBI.

2. STs high in PBI tended strongly to be less satisfied with internship to the extent that their CSs exceeded their TPI score, while low STs low in PBI tended extremely strongly to be more satisfied as their CSs exceeded their TPI score. (From item 12, Table M.)

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[14] It is to be noted here that the U-test of the CT "HH vs MH" D Scale pairing-effect indicated a very similar relationship (see page 47); our confidence that the finding is genuine and not a statistical artifact is thus increased because both the U-test and the regression analysis point to it.

3. The finding of the U-test analysis which was corroborated by item 8, Table M, was "college supervisors who were highly experimental in their philosophic beliefs seemed to influence STs in the medium PBI category to be less satisfied with student teaching, while CSs medium in PBI seemed to influence STs medium in PBI to be more satisfied." (See p. 47.)

Influences on Student Teachers, Other than CTs and CSs

The following effects were identified by multiple regression analysis (see Tables J-M, and discussion), and by t-tests for correlated samples (see Table G).

Influences on interns' PBI, other than their supervisors

1. The University of South Florida seemed to cause a tendency in interns to increase on the PBI. (From item 2, Table J.)
2. Interns at the University of Miami decreased on PBI, while interns at the University of Florida increased on PBI. (From Table G-1.)
3. The total sample of interns (220) lost PBI. (From Table G-1.)

Influences on interns' TPI, other than their supervisors

4. The University of Miami seemed to influence STs to decrease on TPI, while the University of Florida seemed to influence STs to increase on TPI. (From items 6 and 7, respectively, Table K.)
5. Interns' cognitive structure seemed to function so that as they had a higher PBI score, interns at the mean on TPI showed a strong tendency toward becoming less TPI over the internship period, interns two S.D.'s above the TPI mean showed a very strong tendency toward increasing even further in TPI over the internship, while interns two S.D.'s below the TPI mean showed an extreme tendency to decrease even further in TPI over the internship period. (From item 24, Table K.)

Influence on interns' D Scale, other than their supervisors

6. The University of Miami seemed to influence interns to decrease in openmindedness, while the University of Florida seemed to influence interns to increase in openmindedness. (From items 4 and 5, respectively, Table L.)

Influence on interns' SI, other than their supervisors

7. Interns' cognitive structure seemed to function so that, in general, as STs were more open, they tended to be more satisfied with internship, but STs two S.D.'s above the mean in TPI showed a strong tendency to be less satisfied as they were more open, and STs two S.D.'s below the mean on TPI showed a strong tendency to be more satisfied to the extent that they were high on the D Scale. (From item 16, Table L.)

Unanticipated Findings, Involving Interns' "Cognitive Structures"[15]

1. Findings five and seven above could as well be presented under this heading, for both findings are concerned with the ways in which the contents and structures of interns' beliefs--here given the term "cognitive structure"--affects the interns' change in beliefs, and affects their satisfaction.
2. The student teachers may be said to have increased in the logical consistency of their beliefs. This statement is based on the evidence of the increase in correlation between all three basic measures (which are logically compatible), as indicated by the coefficients of correlation given in Table O.

Discussion

Rationalization of Findings

An important question which may be asked regarding such complex findings as reported in this chapter is, "How reasonable

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[15] See definition, p. 79.

TABLE O

COMPARISON OF PRETEST CORRELATIONS[a] TO POSTTEST CORRELATIONS, AMONG THE PBI, TPI, AND D SCALE

	PBI Correlates with TPI at	PBI Correlates with D at	TPI Correlates with D at
220 ST Pretests	.198	.323	.213
220 ST Posttests	.348	.438	.395

[a] These correlations were computed by the published program, "BIOMED 03D, Correlation with Item Deletion," in W. J. Dixon, ed., Biomedical Computor Programs (Los Angeles: University of California Health Sciences Computing Facility, revision of Sept. 1, 1965), pp. 60-65.

and internally consistent, on a non-statistical basis, are they?" To answer this question thoroughly and in depth in the present instance is to essay into the realm of theory-building, an essay which has not been a purpose of this study, and which will not now be attempted. But in the discussion following a less ambitious effort will be made to suggest the "sense" which may be made of the findings.

The findings regarding supervisor-intern interaction, and "cognitive structures" will be explained.

To put all findings in perspective, it should be noted that the patterns of interns' TPI and PBI scores (their "cognitive structures" as the term is used here) seemed to predispose them to very strong tendencies to change in TPI in systematic ways. It was as though the interns were internally "programed" in regard to the TPI changes which would occur, and this internal program or predisposition was stronger in effect than the external influences (such as their institutional affiliation or the effects of their college supervisors or of their cooperating teachers) tested. From this it would appear that the beliefs students hold going into internship are more important in regard to change in TPI than the experiences they have during internship.

The tendencies were "very strong" or "extreme" for STs who were logically consistent, i.e., either high on both TPI and PBI or low on both TPI and PBI, to increase in TPI, and for those logically inconsistent, i.e., mixed in their experimental beliefs in a high-low or low-high fashion, to decrease in TPI.

Most of this poses no problem concerning the logic of the instruments: it seems reasonable that STs high on both TPI and PBI would so participate in and perceive their internship experiences that they would increase in experimental beliefs about teacher practices. And students who lacked a logically coherent belief system, i.e., were high-low or low-high in their PBI-TPI-measured beliefs, might be expected to decline in TPI, just the tendency indicated by this study's data.

But the indication that interns low in both TPI and PBI had an "extreme" tendency to increase in experimental beliefs about teaching practices seems illogical. Such STs would tend to be consistent in their non-experimental belief structure, and might be expected to have a "set" predisposing them to maintain rather than destroy their consistency.

Additional data and analyses are necessary before determination can be made as to whether this questionable effect is a statistical artifact, or a relationship that in truth exists. Pending such corroboration of the "finding," no rationalization of it is offered.

The remainder of this section will deal with the findings more directly relevant to the effects of CTs and CSs on student teachers' beliefs. As an example consider the finding summarized by the statement,

> Over the internship period, STs high in TPI tended strongly to move up or down in PBI directly as their CSs were more or less openminded than they, while STs quite low on TPI tended strongly to change in PBI inversely as their CSs were more or less openminded than they.[16]

The F statistic relative to this finding indicated a confidence level of .01. No contradiction to this finding of the regression analysis was suggested by the U-test analyses. Thus on two purely statistical bases, the indicated relationship deserves confidence. Further, certain lines of non-statistical reasoning tend to support its validity. Therefore the finding is accepted as a genuine relationship that in fact existed among the interns and college supervisors constituting the sample of this study.

The same two cross-checks--(a) lack of contradiction by the U-test analyses and (b) consonance with what might reasonably be expected--lead to acceptance of all other relationships screened out by the multiple regression models save two . These "findings" do not appear reasonable upon non-statistical logical analysis; they are among those whose F statistic warrants a lower confidence level (although they are "significant at the .05 level"); and the U-test analyses did not seem to corroborate the multiple regression analyses.

Accordingly, it was judged that the two "findings" are Type I errors or false positives;[17] among all the massive calculations performed it is probable that statistical artifacts occurred. Pending additional empirical or rational evidence to the contrary then, these "findings" were relegated to Appendix F of this document.

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[16] For the expanded version as well as the summary statement itself and reference to the statistical evidence from which it springs, see page 60.

[17] Mendenhall, op. cit., p. 22.

Only one additional point regarding non-statistical rationalization of this study's data needs now to be suggested. This is that an unknown number of Type II errors, or false negatives, have probably occurred.[18] Since all essential statistics regarding the data and computations are provided in this document (Appendices C-E and Tables J-M) future experimenters may consult the figures for whatever corroboration or refutation of future related research they may provide. Thus in time genuine relationships can be discovered which chance has at present excluded from detection.

General Discussion

As conclusions are drawn and implications are suggested in the last chapter of this report, chief attention will be paid to the findings in regard to the two beliefs instruments, the PBI and the TPI. It is fortunate, in view of this study's title-implied focus (on student teachers' beliefs), that the two best of the four "best fit" multiple regression models were related to these two instruments which measure substantive beliefs. These 15-variable and 24-variable models (Table J and Table K, respectively) accounted for 29 per cent and 37.7 per cent, respectively, of the variance in the change of the student teachers' beliefs as registered by the pretest-posttest measures on the PBI and the TPI. Although multiple regression equations with smaller "r^2's" will suffice to generate probabilistic statements regarding the variables involved, when a substantial portion of the variance is accounted for (as in the present two instances) we may be much more confident that we are dealing with factors that genuinely matter.

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[18] Ibid.

William James' dictum, "A difference that makes no difference is no difference," need not trouble us in the present instances. The procedures of data analyses have in fact brought to light differences that make a difference.

Some findings of this study are different from what might have been expected from the findings of other related research.

Previous studies have emphasized that the cooperating teacher's close and day-to-day relationship with her student teacher caused the student teacher to be much more affected by the cooperating teacher than by the college supervisor. The findings of the present study seem to indicate that the college supervisor has about as much effect as the cooperating teacher. Does the power of assigning the grade, which resides with the college supervisor, have any effect here? This question is unanswered.

Newsome, Gentry, and Stephens[19] indicated that student teachers lost "logical consistency" over the internship period. If we accept that correlation between the instruments of the present study indicates "logical consistency" in a way that is compatible with their use of the term, then this study's findings contradict the findings of their research, for the correlations between PBI, TPI, D were strikingly higher on the STs' posttest.

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[19] G. L. Newsome, H. W. Gentry, and L. D. Stephens, "Changes in Consistency of Educational Ideas Attributable to Student Teaching Experiences," Journal of Teacher Education, 41:319-23, September 1965.

Certainly the definition of this study's term "openness," i.e., a high score[20] on the D Scale, is different from Bills _et al._'s[21] definition which was a high score on their unique instruments. But if the D Scale and Bills' instruments measure much the same things (and there is some evidence that they do), then this study also contradicts Bills' finding that "the more open the cooperating teacher the more the student teacher lost in openness."

On the whole, if one values openness, the college supervisor's having influence on interns, and logical consistency, the findings of this research are encouraging.

A finding that is not surprising, although not anticipated (and certainly not in the obtained strength), is that student teachers' cognitive structures existing prior to internship had powerful influence on the effect which the presses and opportunities of internship seemed to have, on the young women.

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[20] The scoring procedure used in this and all research related to the Teacher Competence Research Project, University of Florida, Gainesville, gives raw scores inversely related to the raw scores derived as outline in Rokeach's _The Open and Closed Mind_. Rokeach's scoring indicates a respondent is openminded (low dogmatic) when his score is low; the present scoring procedure indicates openmindedness (low dogmatism) by a high score.

[21] Robert E. Bills, Virginia M. Macagnoni, and Richard J. Elliot, "Student Teacher Personality Change as a Function of the Personalities of Supervising and Cooperating Teachers," final report on Project 5-020, U. S. Office of Education Cooperative Research Program, August 31, 1964.

Possible Specific Application

Let us examine briefly what we may now be able to accomplish by using the information provided by the findings of this study to "match" CTs, STs, and CSs. The findings are numerous and complex; therefore, choices must be made among them so that, say, two of the four measures (PBI, TPI, D Scale, and SI) could be increased. As an illustrative example, consider what might be done by a Director of Student Teaching if policy allowed him to structure CT-ST-CS trios so as to increase experimental beliefs about teacher practices (TPI scores) and open-mindedness (D Scale scores) among interns. The specific application desired is to use the findings of this study to increase these two qualities.

Consider the finding, "STs high in PBI tended strongly to gravitate toward their CSs' TPI positions, while STs quite low in PBI tended very strongly to reject their CSs' TPI positions, relative to themselves." STs who are high on PBI could be assigned to CSs who are high on TPI, while STs low on PBI could be assigned to CSs who are low on TPI. Thus for both type matches there would be an increase in TPI among the STs, if the cited finding should be generalizable to other populations.

Going on, consider the finding, "STs high in TPI tended moderately to gravitate toward their CTs' TPI positions, while STs quite low in TPI tended strongly to reject their CTs' TPI positions relative to their own." The matches suggested in the paragraph preceding are CS-ST matches. CT-ST TPI matches of "HH" and "LL" patterns[22] would result in an increase in TPI for STs both high and low in TPI, if the cited finding should be generalizable to other populations.

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[22] The convention of placing the student teachers' symbol second in the "HH," "LL" abbreviations is followed.

No conflicts could occur if the matching procedures in the two above paragraphs were followed, for the last paragraph suggests CT-ST matches while the other paragraph suggests CS-ST matches. Thus, using only two of the findings of this study to guide specific structuring of ST-CT-CS trios, it seems highly likely that experimental beliefs about teaching practices could be increased among interns who are high and interns who are low in TPI and PBI. More complex matching procedures would probably be required to effect increases among the middle group.

Findings regarding supervisors' influence on student teachers' open-closed mindedness provide fewer options. There are only two findings, both concerning CTs' influence upon STs.[22] It is indicated that CT-ST "HH" matches by D Scale should be made and "MH" matches avoided, while the remainder of interns should be placed with CTs higher on the D Scale than themselves. If the cited relationships are general to other populations than that of this study, these matching procedures will result in an increase in openmindedness among STs.

The findings of this study could guide a number of other matching combinations aimed at increasing the qualities measured by the study's instruments. The above discussion, however, indicates the possible specific applications in regard to openmindedness, and some of the applications in regard to experimental beliefs about teaching practices.

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[23] See "Effect of cooperating teachers on interns' open-closed mindedness," p. 63, and the footnote on p. 63.

Conclusion of Chapter

The over-arching aim of this chapter has been to use the tools of analysis, logic, and statistics to discover some of the effects that cooperating teachers and college supervisors have on student teachers. In doing this, various complexities and side issues have had to be confronted and either resolved or put in perspective. Stated in another way, the purpose of this chapter has been to present with a degree of clarity and precision the findings which reasonably may be asserted, given the design and the data sample of this research.

A simplified summary of these findings and an exploration of their meanings are included in Chapter IV.

CHAPTER IV

SUMMARY, CONCLUSIONS, IMPLICATIONS

Summary

The purpose of this study was to explore some effects cooperating teachers and college supervisors have on student teachers' beliefs, belief systems, and satisfaction with student teaching. These qualities were defined for the purposes of this study as scores on four paper and pencil questionnaires:

1. The Personal Beliefs Inventory (PBI), which measures agreement or disagreement with John Dewey in the area of philosophical beliefs.
2. The Teacher Practices Inventory (TPI), which measures agreement or disagreement with John Dewey in the area of beliefs about teacher practices. (Thus, both the PBI and the TPI are explicitly, theoretically, and empirically grounded in the same system, the philosophy or experimentalism as extracted from Dewey.)
3. The Dogmatism Scale (D Scale), which measures not substantive beliefs but the "how" of mental functioning: the extent to which the respondent's belief system is functionally open or closed.
4. The Satisfaction with Student Teaching (Internship) Inventory (SI), which measures positive or negative affect toward student teaching.

Four institutions of higher education--the University of Florida, the University of South Florida, the University of Miami, and Florida Southern College--cooperated so that all their elementary interns (381) in the winter term of 1966 constitute the population of the study.

Student teachers filled out the PBI, the TPI, and the D Scale twice--just before going into the field phase of their internship, and just prior to completion of their internship term, when they had returned to the campus of their institution. At the posttest they also responded to the SI. Previously, throughout the term, their cooperating teachers and college supervisors had been approached by the investigator to secure their responses to the PBI, the TPI, and the D Scale. A sample of 181 complete data sets, each consisting of the thirteen instruments from a ST-CT-CS trio, eventuated. Two sources of systematic attrition of data were refusal or inability of CSs and CTs to complete the instruments.

Descriptive statistics, t-tests for correlated samples, Mann-Whitney U-tests, multiple regression analyses, and the criterion of internal consistency of findings were employed to identify and explore any significant relationships related to the purpose of the study. Major findings are as follows.

Findings in Regard to Student Teachers' Experimental Philosophic Beliefs

1. Over the internship period, STs high in TPI tended strongly to move up or down in PBI directly as their CSs were more or less openminded than they, while STs quite low on TPI tended strongly to change in PBI inversely as their CSs were more or less openminded than they.

2. The University of South Florida seemed to cause a tendency in interns to increase in PBI score.

3. Over the internship period, STs at the University of Miami decreased in PBI. STs at the University of Florida increased in PBI, and the total sample of interns (220) lost PBI.

Findings in Regard to Student Teachers' Experimental Beliefs about Teaching Practices

4. Over the internship period, highly openminded STs tended mildly to change in TPI inversely as their CSs were more or less open than they, while highly closed minded STs tended strongly to change in TPI directly as their CSs were more or less open than they.

5. Over the internship period, STs high in PBI tended strongly to gravitate toward their CSs TPI positions, while STs quite low in PBI tended very strongly to reject their CSs' TPI positions relative to their own.

6. Over the internship period, STs highly experimental in beliefs about teaching practices tended moderately to gravitate toward their CTs' TPI positions, while STs quite low in TPI tended strongly to reject their CTs' TPI positions relative to their own.

7. STs at the University of Miami decreased in TPI while those at the University of Florida increased.

Findings in Regard to Student Teachers' Open-Closed Mindedness

8. In general there was a mild tendency for CTs to influence STs' open-closed mindedness directly so that as CTs were higher on the D Scale than their STs, the interns tended mildly to increase, and vice versa. This influence was most striking among STs who were highly openminded. These interns increased in D Scale scores interning with CTs in the highly open category, and lost interning with CTs in the medium category.

9. Interns at the University of Miami tended to decrease in openmindedness while those at the University of Florida tended to increase.

Findings in Regard to Student Teachers' Satisfaction with Internship

10. At the end of student teaching, interns in the medium PBI category were less satisfied if they interned with CSs high in experimental philosophic beliefs, and more satisfied if they interned with CSs medium in experimental philosophic beliefs.

11. At the end of internship, STs highly experimental in beliefs about teacher practices tended mildly to be more satisfied as their CTs were higher on PBI than they initially were, while STs low in TPI tended strongly to be less satisfied to the extent that their CTs were higher on PBI than they initially were.

Findings in Regard to Student Teachers' Cognitive Structures[1]

12. Interns' cognitive structures seemed to function so that, in general as STs were more openminded, they tended to be mildly more satisfied with internship, but student teachers highly experimental in beliefs about teacher practices showed a strong tendency to be less satisfied as they were more open, and STs low in TPI showed a strong tendency to be more satisfied to the extent that they were higher on the D Scale.

13. Interns' cognitive structures seemed to function so that as they were more experimental in philosophic beliefs, interns at the TPI mean had a strong tendency toward decreasing in TPI over the internship period; interns two S.D.'s above the TPI mean had a strong tendency to increase even further in TPI, while those two S.D.'s below the mean had an extreme tendency to decrease in experimental beliefs about teaching practices.

14. On the evidence of increase in correlation among all three of the (logically compatible) basic instruments of the study, the student teachers may be said to have increased in the logical consistency of their beliefs over the internship period.

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[1] "Cognitive structures" are defined here as the pattern of contents and open-closed functioning of mind.

Conclusions and Implications

Readers who have been attempting an interpretive reading of this document may at this point be demanding, "But what does it all mean?" This problem, the meaning of the findings, is now in figure.

Substantively and specifically, the findings probably mean that matches among CT-ST-CS trios can be made so that at least two of the four qualities treated as dependent variables--student teachers' (1) change in experimental philosophic beliefs, (2) change in experimental beliefs about teaching practices, (3) open-closed mindedness, (4) positive-negative affect toward student teaching--can be maximized or minimized. This seems possible by the selective structuring of CT-ST-CS trios according to PBI, TPI, and D Scale Scores.[2] The effectiveness and efficiency of such structuring could be increased by knowledge gained from further investigations similar to the present.

Methodologically, the present study demonstrates what can be accomplished in research on student teaching by the use of appropriate instrumentation and sophisticated techniques of multivariate analysis. The complex relationships have been shown amenable to analysis by intelligent application of present-day measurement, statistical, and computing technology. The degree of specificity[3] as to the effects of particular patterns of CT-ST-CS matches which this type analysis enables has heretofore rarely been demonstrated to be possible. What are the limits to this now-demonstrated power of specification? It is impossible to determine at this point in time. The answer must come from future research.

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[2] For an example, see the "Possible Specific Application" in Chapter III.

[3] Cf., "Possible Specific Application" in Chapter III.

Ethically, the findings urge confrontation of an enduring problem: Is it right to deliberately structure human interactions (and CT-ST-CS-cooperating class situations involve human interactions of a rich variety) so as to insure this or that outcome? If the answer is "It depends on the outcome," then the rejoinder may be, "You mean the end justifies the means?"

Involved are complex questions of ends-means, teaching-learning, structure vs. minimum of structure. In short, some of the basic philosophic and strategic questions which have troubled teacher education personnel in regard to their professions are involved.

With the possible exception of openmindedness, the four criterion qualities are far from universally acceptable objectives of teacher education programs. For example, it seems highly questionable to deliberately "place" a student of ordinary Christian belief in a CT-ST-CS trio so that his experimental philosophic beliefs would probably be increased. This example and others that might be given have been of little consequence heretofore, because it has been impossible to structure CT-ST-CS trios with any degree of certainty regarding the effect on the student. But this study indicates that it is now possible to have a much greater predictive knowledge of the outcomes of placements. So the confrontation previously mentioned is forced: are those responsible for teacher education to deliberately structure a student teacher's experiences so that any given body of beliefs are made a part of his being? This question is particularly sharp when the body of beliefs to be inculcated runs contrary to legitimately held beliefs, i.e., orthodox religious convictions.

To answer this question is beyond the realm of this research. But perhaps one significance of this study is that the question must now be confronted in a context of greater urgency.

Going on, it is interesting to note what seems to be the single most powerful substantive effect discovered by this research. This is, that students' beliefs on PBI and TPI before internship are of an "extremely" predisposing nature in regard to the changes in beliefs about teaching practices which take place.[4] This indication of the importance of the student teachers' internalized belief structure has significance for persons with responsibility for educating elementary school teachers. It urges more efforts in pre-internship course work, particularly in foundation courses, toward developing a logically coherent set of beliefs about teaching practices and about more general philosophic concerns, if more control over the effects of internship is desired.

An intriguing practical consideration is opened up by this study's indication of possibilities from sophisticated structuring of CT-ST-CS trios. The consideration is that the intern, the cooperating teacher, the college supervisor, and the cooperating class can more beneficially engage in mutual discovery and at a higher level, provided the ethical issues discussed can be met.[5] It is likely that with a spirit of partnership in teacher education, cooperating schools and higher education can engage in free and open dialogue so that mutually acceptable worthy goals can be agreed upon and the ethical issues be resolved (or at least dealt with openly and fairly).

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[4] Cf. discussion on page 64 and supporting statistics; also pages 67-68.

The stimulus and excitement of having been "matched" by computor to increase chances of accomplishing the agreed-upon objectives should not be discounted. For example, the reader may consider the mushrooming "computorized date matching."

In the present instance, the idea is to enhance the person-to-person interaction within CT-ST-CS trios which can be strengthening or can be blighting. To do so calls for intelligent and ethical use of philosophical, measurement, data processing, and computing technological resources. These resources should be marshalled, to the high end of achieving human potential. Obstacles intervening may be fiendish in complexity and in number, but the goal is worthy; this study hints strongly of valuable means.

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[5] See page 81.

Limitations

The findings of this study are limited, as follows:

1. Findings are trustworthy only to the extent of the reliability and validity of the instruments used.

2. Findings apply strictly only to the student teachers of the winter, 1966, terms of the four institutions of this study.

3. An estimated thirty per cent of the population was systematically excluded from the sample of 181 due to college supervisors' refusal to participate; hence, the sample was to this extent not random.

Recommendations for Further Research

Questions related to this study which are unanswered are:

1. How would the findings of this study be corroborated, changed, or extended by replication?

2. What effects on student teachers identified in this study are permanent over a long period of time?

3. To what extent do the obtained effects of cooperating teachers and college supervisors, and the obtained institutional effects, represent factors general to other populations than that of this research?

4. How desirable, in terms of the educational value for children, empirically determined, are high or low scores by teachers on the instruments of this study?

5. Using research designs similar to the present, what different effects of cooperating teachers and college supervisors might be identified, utilizing the verbal-logical structure made possible by instruments based on different philosophical systems as Liberal Christian Idealism, Realism, Marxism, Exsitentialism, Thomism?

6. Using the same instruments and related instruments of this study and similar research designs, what effects might be identified on interns who are teaching at different levels and/or teaching students who markedly differ in socio-economic and racial backgrounds?

7. Which of the factors specified under "Delimitation of the Problem," Chapter II, have significant effects on interns?

8. If it is possible to secure the data, what identifiable effects on student teachers have college supervisors and cooperating teachers who are inclined to refuse participation to such a study as the present?

9. What are the effects of teacher education experiences immediately following the internship?

10. What understandings regarding the effects and meaning of internship experiences might be afforded by studies using the same (or different) theoretical bases and instrumentation as the present, but more individualized and/or clinical procedures of data collection?[6]

11. To what extent do the instruments of this study measure the same things, and hence can be validly related to the findings of studies utilizing such instruments as the MTAI, the GNC Scale of Logical Consistency of Ideas about Education, the Education Opinionaire, and Bills *et al.*'s q-sorts measuring "openness"? (A large-scale effort to cross-validate these and other instruments would seem fruitful.)

12. What might be the effect on cooperating teachers and college supervisors of graduate courses with a content implied by a title something like "Studies in Student Teaching"?

13. Would studies having an action-research pattern, and/or education-oriented rather than persuasion-oriented experimental procedures[7] have valuable outcomes?

14. What cause-effect patterns would emerge from research with the same design and instrumentation as the present, but with a large enough sample to enable more searching analysis using cells of data (the Mann-Whitney analyses of the present study)?

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[6] For a suggestive example, see Dean Corrigan and Kenneth Griswold, "Attitude Changes of Student Teachers," *Journal of Education Research*, 57:93-95, October, 1963.

[7] For an example and a point of view, see the discussion and research presented in Milton Rokeach, "Organization and Change within Value-Attitude Systems," *Beliefs, Attitudes and Values* (San Francisco: Jossey-Bass, Inc., Publishers, 1968), pp. 156-178.

15. What systematic effects on student teachers can be traced to the relative experience or inexperience of college supervisors and/or cooperating teachers?

16. What systematic effects on student teachers can be inferred to stem from principals', supervisors', and/or superintendents' patterns of beliefs?

17. Is a general theory for effects of student teaching possible?

18. How adequate or inadequate would the philosophy of experimentalism and the concept of openmindedness--as already defined by the PBI, TPI, and D Scale, and their related literatures--prove to establish the goals of education, when subjected to searching philosophical analyses?

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APPENDICES

APPENDIX A--FORM LETTERS

Sample of Letter Sent to Principals

Dear

Your supertendent has approved my contacting you and the teachers in your school who have elementary interns to request your cooperation in a research project. A general purpose of the study is to enable production of finer teachers by improving internship programs. More specifically, the study is concerned with determining the effects of matching interns and their cooperating teachers according to their responses to a three part questionnaire which is designed to determine some of the respondent's beliefs about philosophical questions, educational practices, and certain social and personal questions.

The study has approval from all members of my doctoral committee--Drs. Bob Burton Brown, J. B. White, Pauline Hilliard, J. B. Hodges, and Henry Pennypacker. The Universities of Florida, Miami, South Florida, and Florida Southern are giving excellent assistance. Their elementary interns will each respond twice to the questionnaire, and college personnel will also respond. If you disapprove, the time spent by the interns in your school (about 1 ½ hours each) will be wasted, insofar as this study is concerned. If you approve, each of your elementary teachers who has an intern from one of the above institutions this trimester (or next semester, in the cases of Florida Southern and the University of Miami) will be asked to fill out the "Study of Beliefs." Past experience suggests that approximately 45 minutes is required to complete the form. The data the forms provide will be analyzed by me under the supervision of my doctoral committee. Each teacher's completed questionnaire will be held in strict confidence.

I know you are interested in the production of quality teachers for our children. My study has promise for improving teacher internship programs. I hope you will choose to assist in the study by approving my contacting your teachers.

The contact will consist of a letter (copy enclosed) sent with the "Study of Beliefs" and a stamped envelope addressed to myself for its return. A form letter giving your decision has been enclosed for your easy reply. Thank you for your consideration.

Sincerely yours,

Allen Hayes
Advanced Doctoral Student

Sample of Principals' Form of Authorization

Mr. Allen P. Hayes, Doctoral Student
University of Florida
621 N. W. 34th Terrace
Gainesville, Florida 32601

Dear Mr. Hayes:

I give my approval for the cooperating teachers of my school joining with you in your project. In so doing, I understand the following:

(1) This is primarily a study of the effect on the elementary intern (student teacher) of the match in beliefs between the intern and the cooperating teacher.

(2) That the responses of each individual cooperating teacher to the questionnaire will be kept in strictest confidence.

____
(signed)

____________________, Principal
(name, typed or printed)

____
(name of school)

____
(city)

____
(county)

Sample of Letter Sent to Cooperating Teachers

Your Superintendent and Principal have approved your assisting in a research project. This letter is to explain the nature of the project and to ask your cooperation. A general purpose of the study is to enable production of finer teachers by improving internship programs. More specifically, the study is concerned with determining the effects of matching interns and their cooperating teachers according to certain patterns in their responses to the enclosed questionnaire, "Study of Beliefs." The study has approval from all members of my doctoral committee--Drs. Bob Burton Brown, J. B. White, Pauline Hilliard, J. B. Hodges, and Henry Pennypacker.

The University of Florida, Florida Southern College, the University of South Florida, and the University of Miami are giving excellent assistance. Their elementary interns will each respond twice to the questionnaire, and college personnel will also respond. If you choose not to assist, the time your intern spends (about 1 ½ hours) will be wasted, insofar as this study is concerned. If you choose to join with us in the study, simply respond to the "Study of Beliefs" enclosed and mail it to me in the envelope provided. You will be aiding a research study of some promise.

Past experience suggests that approximately 45 minutes is required to complete the form. The data your responses provide will be pooled with that of many others. The groups of data will be analyzed by me under the supervision of my doctoral committee. Your individual questionnaire will be kept in the strictest confidence.

I know you are interested in the production of quality teachers for our children. This study has promise for improving teacher internship programs. I hope you will choose to join us in successfully completing it.

I am and have been a public elementary school teacher for six years; therefore, I know something of the pressures and demands upon your time. Enclosed is a stamped and addressed envelope for your easy reply, which I urge within this week, lest your good intentions be lost in procrastination. Thank you for your consideration.

Sincerely yours,

Allen Hayes

APPENDIX B--THE STUDY'S FOUR INSTRUMENTS

I. Personal Beliefs Inventory (PBI)

This is a study of what people believe about a number of basic philosophical questions. The best answer to each statement below is your personal belief. Many different and opposing points of view are presented here. You will find yourself believing some of the statements, not believing some, and uncertain about others. Whether you believe or do not believe any statement, you can be sure that many people feel the same as you do.

Mark each statement in the left margin by writing 1, 2, 3, or 4, 5, 6, depending on how you feel in each case.

1: I AGREE VERY MUCH
2: I AGREE ON THE WHOLE
3: I AGREE A LITTLE
4: I DISAGREE A LITTLE
5: I DISAGREE ON THE WHOLE
6: I DISAGREE VERY MUCH

____ 1. Change is a basic characteristic of nature, and man has some measure of control over this change by using his intelligence.

____ 2. Knowledge is truth to be accepted, held, and treasured for its own sake.

____ 3. A statement of fact may be both true and untrue depending on the standpoints and conditions of the observations.

____ 4. To know something is to know the inner nature of things, i.e., as they really are prior to investigation.

____ 5. Man doesn't have a "spirit" which is separable from his body and the material world.

____ 6. Questions of value and moral judgment ought to be open to experimentation and scientific inquiry.

____ 7. All "truths" are relative.

____ 8. Man gains knowledge by having things impressed upon his mind.

____ 9. Truth exists ready-made somewhere; the task of the scholar is to find it.

____ 10. Practice is subordinate to knowledge, merely a means to it.

____ 11. Learning is an application of mental powers to things to be known.

____ 12. Man's destiny is in the hands of a supernatural power.

____ 13. The mind is a group of "contents" which come from having certain material presented to it.

____ 14. "Mind" is purely intellectual and cognitive; bodily activity is an irrelevant and intruding physical factor.

____ 15. The ends and laws which should regulate human conduct have been determined by the superior intelligence of an ultimate Being.

____ 16. Knowledge is the sum total of what is known, as that is handed down by books and learned men.

____ 17. What something may be when totally independent of any observer or frame of reference is a scientifically meaningless question.

____ 18. The mind is formed from without, as one molds and shapes a piece of clay.

____ 19. Man's primitive impulses are neither good nor evil, but become one or the other according to the objects for which they are employed.

____ 20. There is no spiritual realm which lies beyond man's experience in the natural world.

____ 21. What is morally right and wrong ought to be decided on warranted evidence--the findings of empirical science.

____ 22. Knowledge is the result of theoretical insight on the part of scholars.

____ 23. There can be no final, absolute ends to which all men aspire.

____ 24. The mind turns outward to truth; the emotions turn inward to considerations of personal advantage and loss.

____ 25. The use of the scientific method can be extended to solve the problems of men in the area of values and moral judgments.

____ 26. Man is capable of managing his own destiny in an understandable and predictable natural world.

____ 27. The mind possesses faculties for remembering, imagining, reasoning, willing, and so forth, which are developed by exercise and discipline.

____ 28. What is right and good at one time and place may not be right and good for all times and places.

____ 29. You can never prove that any fact is unconditionally true.

____ 30. The senses and muscles are merely external inlets and outlets of the mind.

____ 31. Man's destiny is determined by circumstances of nature which are beyond his control.

____ 32. Knowledge is artificial and ineffective in the degree in which it is merely presented as truth to be acquired and possessed for its own sake.

____ 33. Man's choices are good only if they prove successsful in helping him live with some degree of security and equilibrium in the world of nature.

____ 34. Reaching a condition in which there were no more problems would be the ideal life.

____ 35. In the absence of a moral code supported by absolute authority, bodily appetite and passion overpowers intelligence.

____ 36. Questions of value and moral judgment ought to be open to experimentation.

____ 37. Learning is the sum of impressions made on the mind as a result of presentation of the material to be known.

____ 38. Nothing is or can be unchanging, absolutely certain.

____ 39. The nature of a thing is determined by what it does, or can be used for; it is what it becomes with intelligent use.

____ 40. Questions of values and morals should be taken out of their traditional supernatural setting and put in a naturalistic setting.

II. Teacher Practices Inventory (TPI)

This is a study of what people believe is good teaching. Each statement below describes teacher practice--something a teacher might do in a classroom. Many different and opposing kinds of teacher practices are presented here. As you read these statements, you will find yourself agreeing with some, disagreeing with some, and uncertain about others. The best answer to each statement is your personal belief or opinion.

Mark each statement in the left margin by writing 1, 2, 3, or 4, 5, 6, depending on how you feel in each case.

1: I AGREE VERY MUCH	4: I DISAGREE A LITTLE
2: I AGREE ON THE WHOLE	5: I DISAGREE ON THE WHOLE
3: I AGREE A LITTLE	6: I DISAGREE VERY MUCH

____ 1. Gives students opportunity to select facts and information which they consider appropriate to the question.

____ 2. Usually has all students working on the same page of the same book at the same time.

____ 3. Makes students emphatically aware that they are here to study and learn.

____ 4. Once work has begun, insists that students remain in their places and concentrate on the task at hand.

____ 5. Asks the kind of questions that students should be able to answer if they have studied the lesson.

____ 6. Makes a direct presentation of the subject matter to be covered.

____ 7. Permits students to go ahead with plans based on foresight, observation, and consideration of several alternatives--even when sure their judgment is mistaken.

____ 8. Makes "doing something" with a thing, rather than the thing itself, the center of students' attention.

____ 9. Focuses attention on what the students do or say, rather than on what the teacher does or says.

____ 10. Makes the acquisition of knowledge and skills the center of students' attention and effort.

____ 11. Has students compare the value of alternative courses of action and pass judgment on their relative desirability.

____ 12. When one student fails to answer a question, asks another student to supply the correct answer.

____ 13. Encourages students to suggest what might be done--to make "hypothetical leaps" into the unknown or untested.

____ 14. Encourages students to put their suggestions to a test with such remarks as "You'll never know unless you try it."

____ 15. Tells students where to start and what to do to accomplish the task at hand.

____ 16. Organizes learning around questions posed by the teacher or the textbook.

____ 17. Faithfully follows a planned schedule in order to get in the number of minutes each week allottted to each subject in the curriculum.

____ 18. Gives students a wide choice in how they answer questions.

____ 19. Provides a model to show students exactly what their work should be like when it is finished.

____ 20. Gives students a free rein in devising and inventing proposals for what might be done to clear up troublesome situations.

____ 21. Engages students in dramatizations, music, art, and other creative activities.

____ 22. Uses a set standard to judge the work of all students in the class.

____ 23. Insists that students face up to the realities of unpleasant predicaments and plights they get themselves into.

____ 24. Accepts material in the approved textbook as a reliable measure for the appropriatenesss of information brought in by students from other sources.

____ 25. Lets students become involved in ugly or distressing aspects of subjects.

____ 26. Frequently asks students to choose among several alternatives.

____ 27. Sticks to questions which can be answered by looking in the textbook or other references readily available in the school.

____ 28. Limits physical activities to the gym or the playground.

____ 29. Asks students to work on their own problems, rather than something made a problem only for the purpose of conveying instruction in some school subject.

____ 30. Gives students a chance to discover by experiencing actual effects whether their choice of this rather than that idea was a judicious one.

____ 31. Urges students to put everyday things to uses which have not occurred to others.

____ 32. Gives students a number of starting places and a number of different ways of getting at what is to be done.

____ 34. Shows students the most economical and efficient way to get a job done, and expects them to do it pretty much that way.

____ 35. Allows students to move freely about the room while engaged in purposeful activity.

____ 36. Quickly tells students whether their answers are "right" or "wrong."

____ 37. Calls for the undivided attention of the group and scolds those who do not respond.

____ 38. Asks the students to help decide when questions have been satisfactorily answered.

____ 39. Encourages students to adventure into "deep water," to tackle problems that appear to be "over their heads."

____ 40. Motivates students to greater intellectual effort by rewarding them with grades, marks, prizes, or privileges.

III. Personal Opinion Questionnaire
(D Scale)

The following is a study of what the general public thinks and feels about a number of important social and personal questions. The best answer to each statement below is your personal opinion. We have tried to cover many different and opposing points of view; you may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others, and perhaps uncertain about others; whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Mark each statement in the left margin according to how much you agree or disagree with it. Please mark every one.

Write 1, 2, 3, or 4, 5, 6, depedning on how you feel in each case.

1: I AGREE VERY MUCH
2: I AGREE ON THE WHOLE
3: I AGREE A LITTLE
4: I DISAGREE A LITTLE
5: I DISAGREE ON THE WHOLE
6: I DISAGREE VERY MUCH

____ 1. There is so much to be done and so little time to do it in.

____ 2. Of all the different philosophies which exist in this world there is probably only one which is correct.

____ 3. To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.

____ 4. Taking the Bible as a whole, one should regard it from the point of view of its beautiful mythology and literary style rather than as a spiritual revelation.

____ 5. The present is all too often full of unhappiness. It is only the future that counts.

____ 6. In times like these it is often necessary to be more on guard against ideas put out by people or groups in one's own camp than by those in the opposing camp.

____ 7. Our modern industrial and scientific developments are signs of a greater degree of civilization than those attained by any previous society, the Greeks, for example.

____ 8. A person must be pretty short-sighted if he believes that college professors should be forced to take special loyalty oaths.

____ 9. It is only natural for a person to be rather fearful of the future.

____ 10. Most people just don't give a "damn" for others.

____ 11. Good government should aim chiefly at more aid for the poor, sick, and old.

____ 12. The highest form of government is a democracy and the highest form of democracy is a government run by those who are most intelligent.

____ 13. The United States and Russia have just about nothing in common.

____ 14. The educational policies of the public schools should promote the study and participation in music and fine arts.

____ 15. Modern society would benefit more from greater knowledge of the fundamental laws of human behavior than from more concern for the rights and welfare of citizens.

____ 16. The educational policies of the public schools should undertake to increase the practical value of courses.

____ 17. The aim of churches at the present time should be to bring out altruistic and charitable tendencies rather than to encourage spiritual worship and a sense of communion with the highest.

____ 18. A person who thinks primarily of his own happiness is beneath contempt.

____ 19. A group which tolerates too much difference of opinion among its own members cannot exist for long.

____ 20. Man on his own is a helpless and miserable creature.

____ 21. When it comes to differences of opinion in religion we must be careful not to compromise with those who believe differently from the way we do.

____ 22. If given the chance I would do something of great benefit to the world.

____ 23. As a branch of study theology ultimately will prove more important to mankind than mathematics.

____ 24. It is better to be a dead hero than to be a live coward.

____ 25. In this complicated world of ours the only way we can know what's going on is to rely on leaders or experts who can be trusted.

____ 26. The educational policies of the public schools should stimulate the study of social problems.

____ 27. It's the fellow travellers or Reds who keep yelling all the time about Civil Rights.

____ 28. Abraham Lincoln should be judged as contributing more to the progress of mankind than Aristotle.

____ 29. I'd like it if I could find someone who would tell me how to solve my personal problems.

____ 30. While I don't like to admit this even to myself, my secret ambition is to become a great man, like Einstein or Beethoven or Shakespeare.

____ 31. In the history of mankind there have probably been just a handful of really great thinkers.

____ 32. The main thing in life is for a person to want to do something important.

____ 33. Assuming that one had sufficient ability, it would be better to be a banker than a politician.

____ 34. There are two kinds of people in this world: those who are for the truth and those who against the truth.

____ 35. If a man is to accomplish his mission in life it is sometimes necessary to gamble "all or nothing at all."

____ 36. My blood boils whenever a person stubbornly refuses to admit he's wrong.

____ 37. There are a number of people I have come to hate because of the things they stand for.

____ 38. A man who does not believe in some great cause has not really lived.

____ 39. It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects.

____ 40. Fundamentally, the world we live in is a pretty lonesome place.

____ 41. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.

____ 42. It is more important for a child to secure training in religion than in athletics.

____ 43. It is more important for modern leaders to bring about the accomplishment of practical goals than to encourage greater interest in the rights of others.

____ 44. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.

____ 45. A person who gets enthusiastic about too many causes is likely to be a pretty "wishy-washy" sort of person.

____ 46. You just can't help but feel sorry for the person who believes that the world could exist without a Creator.

____ 47. Good government should aim chiefly at establishing a position of prestige and respect among nations.

____ 48. Once I get wound up in a heated discussion I just can't stop.

____ 49. In heated discussion I generally become so absorbed in what I am going to say that I forget to listen to what the others are saying.

____ 50. It is justifiable for great artists, such as Beethoven, Wagner, and Byron to be selfish and negligent of the feelings of others.

____ 51. In the long run the best way to live is to pick friends and associates whose tastes and beliefs are the same as one's own.

____ 52. One should develop one's chief loyalties toward one's occupational organization and associates.

____ 53. A person must be pretty stupid if he still believes in differences betweeen the races.

____ 54. It is only natural that a person would have a much better acquaintance with ideas he believes in than with ideas he opposes.

____ 55. Unfortunately, a good many people with whom I have discussed important social and moral problems don't really understand what's going on.

____ 56. The worst crime a person could commit is to attack publicly the people who believe in the same thing he does.

____ 57. Most of the ideas which get printed nowadays aren't worth the paper they are printed on.

____ 58. Most people just don't know what's good for them.

____ 59. The most important function of education is its preparation for practical achievement and financial reward.

____ 60. It is only when a person devotes himself to an ideal or cause that life becomes meaningful.

____ 61. Good government should aim chiefly at the development of manufacturing and trade.

____ 62. The main object of scientific research should be the discovery of truth rather than its practical applications.

____ 63. In times like these, a person must be pretty selfish if he considers primarily his own happiness.

____ 64. One should develop one's chief loyalties toward one's religious faith.

____ 65. High ideals and reverence are more desirable traits than unselfishness and sympathy.

____ 66. Developing the mastery of a favorite skill is a more important use of leisure time than doing volunteer social or public service work.

IV. Satisfaction Inventory (SI)

This inventory consists of 32 multiple choice statements designed to sample opinions about student teaching experiences. There is considerable variation as to the experiences encountered by student teachers. What is wanted is your feeling about your own individual experiences. There are, of course, no "right" or "wrong" answers.

If you have worked with more than one directing teacher, respond in terms of the situation in which you spent the most time. If you have spent about as much time in each situation, respond in terms of your last experience.

Your opinions about the student teaching experience will, of course, be held strictly confidential. The data will be used for research purposes only. PLEASE RESPOND TO EVERY ITEM.

1. I feel that the contributions I made to the class activity as a whole: a. were not usually effective. b. were constructive and helpful. c. were too infrequent to be effective.

2. The comments made by my cooperating teacher regarding my mistakes were: a. just critical enough to be helpful. b. overly critical. c. not critical enough.

3. In general, I thought the behavior of the pupils I taught was: a. too subdued. b. too rowdy. c. satisfactory.

4. I was made responsible for conducting the class: a. sooner than I would have liked. b. later than I would have liked. c. at just about the right time.

5. My student teaching experience left me with a feeling that teaching is: a. somewhat disorganized. b. very challenging and interesting. c. a little too routine.

6. When discussing my student teaching performance with me, my college supervisor was: a. too critical. b. not critical enough. c. just critical enough.

7. The intellgience level of most of the pupils I taught: a. was lower than I would have liked. b. was just about what I would like in my own class. c. was higher than I would have liked.

8. A comparison of what I strived for and what I attained in teaching my pupils made me: a. feel that I may have expected too much of myself. b. feel a sense of accomplishment. c. feel a bit discouraged.

9. In preparing me to become a member of the teaching profession, student teaching has left me with a feeling of being: a. unqualified to enter the schools as a teacher. b. barely prepared to teach in the schools. c. adequately prepared to teach in the schools.

10. My personal relatinships with staff members at the school: a. were very pleasant and cordial. b. were distant and impersonal. c. were somewhat unsatisfying.

11. My cooperating teacher's interest in my professional improvement and growth was: a. somewhat superficial. b. sincere and helpful. c. intense to the point of being annoying.

12. The regulations to which I, as a student teacher, had to conform seemed: a. unnecessary in many respects. b. rather vague but not unreasonable. c. reasonable and agreeable to me.

13. The assignments given to me by my cooperating teacher: a. were about as varied as they should be. b. were too varied to learn any one aspect of teaching. c. were not varied enough to broaden my experience.

14. In discussions with my college supervisor, my viewpoint:
a. was accepted too often without adequate understanding.
b. was accepted and understood practically all the time.
c. was seldom accepted.

15. My own plans for using methods and materials: a. were needed a little too often. b. were employed often enough. c. were not employed often enough.

16. I was given complete charge of the class: a. not as often as I would have liked. b. about the right number of times. c. more often than I would have liked.

17. The pupils I had in my class: a. seemed indifferent to school activities. b. mildly resisted my attempts to teach them. c. were easily motivated.

18. The amount of clerical work given my by my cooperating teacher was: a. too little for me to learn this aspect of the teaching job. b. appropriate and helpful. c. a little more than I considered necessary.

19. As I evaluate my student teaching in light of my other college work, I am convinced that it: a. was one of my least valuable courses. b. was the most valuable course I have taken. c. was about as valuable as my other college courses.

20. My college supervisor's suggestions were: a. of little help to me. b. too demanding of my time. c. reasonable and helpful.

21. Student teaching gave me a feeling of: a. personal inadequacy in some respects. b. achievement and personal satisfaction. c. discouragement with the gap between educational theory and practice.

22. In general, the atmosphere of the classroom to which I was assigned was: a. too easy going for maximum learning by the children. b. about as democratic as it should be. c. overly dominated by the teacher.

23. If I had the opportunity to do my student teaching over again, I would want to: a. have a more free choice of school and cooperating teacher. b. teach more in accord with the theory I have learned. c. do very much what I have done.

24. I found that my personal relationships with school personnel during student teaching prompted me to: a. just coast along until the end of the term. b. consider postponement of my teaching career. c. put forth a great deal of effort.

25. Ideally I would like to teach pupils whose socio-economic background is: a. lower than the socio-economic background of those whom I taught. b. about the same as the socio-economic background of those whom I taught. c. higher than the socio-economic background of those whom I taught.

26. The amount of satisfaction I had from my student teaching experience made me wonder: a. whether student teaching couldn't be organized more satisfactorily. b. whether some other activity shouldn't be substituted for it. c. why some people dislike this experience.

27. When delegating tasks to me, my cooperating teacher: a. proportioned my work according to the amount of time I had available. b. was not too considerate of the amount of work I had to do outside of student teaching. c. was often unable to find enough things to keep me busy.

28. The methods adhered to by my cooperating teacher: a. were too subject-centered to meet the needs of enough children. b. were too child-centered to effectively teach the necessary subject matter. c. were appropriate for obtaining the desired pupil growth.

29. When planning the classroom activities, my cooperating teacher: a. sometimes assigned the planning to me but often ignored my efforts. b. usually had me participate in the planning with her. c. seldom gave me a chance to participate in the planning.

30. The goals toward which I was striving in my student teaching: a. were generally attained to my satisfaction. b. were seldom attained to my satisfaction. c. were probably not appropriate to the pupils I taught.

31. The kinds of activities in which pupils in my student teaching class participated: a. were too routine to stimulate the interests of the children. b. were about like those I would like in my own classroom. c. were lacking in purpose and meaning for most of the children.

32. The skills I learned during student teaching: a. should be of enormous value when teaching "on my own." b. will probably be unimportant to my future teaching performance. c. were actually too few in number to affect my future teaching.

APPENDIX C--TABLES A-L

TABLES OF STATISTICS RELATED TO THE 216 DISCRETE GROUPS IDENTIFIED ACCORDING TO SCORES ON PBI, TPI, AND D SCALE, WITH CHANGE IN PBI, TPI, AND D SCALE, AND SI SCORE AS DEPENDENT VARIABLES

On the twelve pages following are Appendix C Tables A-L. These tables provide the statistics relative to the pairing-effects of CT-ST and CS-ST matches. The type matches are indicated by the title of each table and by the HH, HM, HL, MH, MM, ML, LH, LM, or LL designations. In each such designation, the first letter indicates the supervisors' and the second letter indicates the interns' groups. The "H's," "M's," and "L's" are abbreviations for high, medium, and low categories. Operational definitions of these categories are provided by Appendix D.

The $\underline{U}$ and $\underline{z}$ statistics were computed to determine the confidence level that differences were not due to chance. Those comparisons which were significant at the .1 level or nearly so are indicated by an asterisk. The eight comparisons significant at the .05 level or less have been provided separately on page 46 which also cites the computor program used to perform the U-tests.

APPENDIX TABLE A

STs' CHANGE IN PBI SCORE, WHEN PAIRED WITH CTs or CSs ACCORDING TO PBI SCORES

	Matched by PBI, and compared			N of Group		Mean PBI Change		U or z Statistic	
	1	vs	2	1	2	1	2	U	z
CT Matches	HH	vs	LH	8	20	-10.75	-9.00	---	-0.382
	HH	vs	MH	8	21	-10.75	-5.71	---	-0.854
	MH	vs	LH	21	20	-5.71	-9.00	---	-0.861
	MM	vs	LM	18	30	1.16	.06	---	-0.533
	HM	vs	LM*	10	30	-5.60	.06	---	-1.909
	HM	vs	MM*	10	18	-5.60	1.11	51.0	-0.250
	ML	vs	LL	15	16	3.60	2.00	---	-0.738
	HL	vs	LL	4	24	9.50	1.83	---	-1.547
	HL	vs	ML	4	15	9.50	3.60	19.0	---
CS Matches	LH	vs	HH	9	19	-15.22	-8.73	56.0	---
	MH	vs	HH	14	19	-8.71	-8.73	115.51	---
	LH	vs	MH	9	14	-15.22	-8.71	41.5	---
	LM	vs	MM*	5	25	-9.20	-1.40	---	-1.616
	LM	vs	HM*	5	24	-9.20	-.08	---	-2.199
	HM	vs	MM	24	25	-.08	-1.40	---	-0.250
	LL	vs	ML	5	12	10.40	4.66	17.5	---
	LL	vs	HL*	5	16	10.40	2.00	16.5	---
	HL	vs	ML	16	12	2.00	4.66	86.5	---

APPENDIX TABLE B

STs' CHANGE IN TPI SCORE, WHEN PAIRED WITH CTs OR CSs ACCORDING TO PBI SCORES

	Matched by PBI, and compared			N of Group		Mean TPI Change		U or z Statistic	
	1	vs	2	1	2	1	2	U	z
CT Matches	HH	vs	LH	8	20	-1.87	2.45	---	-0.178
	HH	vs	MH	8	21	-1.87	-.57	---	-0.342
	MH	vs	LH	21	20	-.57	2.45	---	-0.587
	MM	vs	LM	18	30	2.72	-2.86	---	-1.417
	HM	vs	LM	10	30	-4.10	-2.86	---	-1.156
	HM	vs	MM	10	18	-4.10	2.72	67.0	---
	ML	vs	LL	15	24	.00	.54	---	-0.708
	HL	vs	LL	4	24	-3.25	.54	---	-0.723
	HL	vs	ML	4	15	-3.25	.00	20.5	---
CS Matches	LH	vs	HH	9	19	.66	3.00	82.0	---
	HH	vs	MH	19	14	3.00	3.85	131.0	---
	LH	vs	MH	9	14	.66	3.85	62.0	---
	LM	vs	MM	5	25	-12.80	-2.44	---	-1.365
	LM	vs	HM	5	24	-12.80	-3.25	---	-1.444
	HM	vs	MM	24	25	-3.25	-2.44	---	-0.080
	LL	vs	HL	5	12	6.60	-2.00	21.5	---
	LL	vs	NL	5	17	6.60	.23	35.5	---
	HL	vs	ML	17	12	.23	-2.00	86.0	---

APPENDIX TABLE C

STs' CHANGE IN D SCALE SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO PBI SCORES

	Matched by PBI, and compared			N of Group		Mean D Change		U or _z_ Statistic	
	1	vs	2	1	2	1	2	U	_z_
CT Matches	HH	vs	LH	8	20	.12	1.05	---	-0.484
	HH	vs	MH	8	21	.12	.00	---	-0.122
	MH	vs	LH	21	20	.00	1.05	---	-0.366
	MM	vs	LM	18	30	3.61	-.83	-1.438	---
	HM	vs	LM	10	30	-3.10	-.83	---	-0.141
	HM	vs	MM	10	18	-3.10	3.61	71.5	---
	ML	vs	LL*	15	24	-6.60	3.08	---	-1.589
	HL	vs	LL	4	24	9.25	3.08	---	-0.690
	HL	vs	ML	4	15	9.25	-6.60	18.0	---
CS Matches	LH	vs	HH	9	19	-1.00	-.15	74.0	---
	HH	vs	MH	19	14	-.15	1.21	125.0	---
	LH	vs	MH	9	14	-1.00	1.21	59.0	---
	LM	vs	MM	5	25	-5.80	4.68	---	-0.891
	LM	vs	HM	5	24	-5.80	-.54	---	-0.433
	HM	vs	MM	24	25	-.54	4.68	---	-1.091
	LL	vs	ML	5	12	3.80	3.50	27.0	---
	LL	vs	HL	5	16	3.80	-.12	38.5	---
	HL	vs	ML	16	12	-.12	3.50	93.5	---

APPENDIX TABLE D

STs' SI SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO PBI SCORES

	Matched by PBI, and compared			N of Group		Mean SI Score		U or _z_ Statistic	
	1	vs	2	1	2	1	2	U	_z_
CT Matches	HH	vs	LH	8	20	28.00	25.40	---	-0.997
	HH	vs	MH*	8	20	28.00	21.40	---	-2.701
	MH	vs	LH*	20	20	21.40	25.40	---	-1.871
	MM	vs	LM	18	29	26.55	24.72	---	-1.056
	HM	vs	LM	10	29	26.90	24.72	---	-0.518
	HM	vs	MM	10	18	26.90	26.55	80.5	---
	ML	vs	LL	14	23	28.21	25.52	---	-0.915
	HL	vs	LL	4	23	21.25	25.52	---	-1.305
	HL	vs	ML	4	14	21.25	28.21	11.5	---
CS Matches	LH	vs	HH	9	18	22.22	24.16	77.0	---
	HH	vs	MH	18	14	24.16	23.57	120.5	---
	LH	vs	MH	9	14	22.22	23.57	62.0	---
	LM	vs	MM	5	24	26.80	27.37	---	-0.203
	LM	vs	HM	5	24	26.80	23.37	---	-0.986
	HM	vs	MM*	24	24	23.37	27.37	---	-2.049
	LL	vs	ML	4	12	27.50	23.50	18.0	---
	LL	vs	HL*	4	15	27.50	28.80	11.5	---
	HL	vs	ML*	15	12	28.80	23.50	41.0	---

APPENDIX TABLE E

STs' CHANGE IN PBI SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO TPI SCORES

	Matched by TPI, and compared			N of Group		Mean PBI Change		U or _z_ Statistic	
	1	vs	2	1	2	1	2	U	_z_
CT Matches	HH	vs	LH	7	12	-9.71	-3.58	26.0	---
	HH	vs	MH*	7	14	-9.71	-1.50	26.0	---
	MH	vs	LH	14	12	-1.50	-3.58	72.0	---
	MM	vs	LM	36	39	1.27	.07	---	-0.664
	HM	vs	LM	11	39	.63	.07	---	-0.188
	HM	vs	MM	11	36	.63	1.27	---	-0.227
	ML	vs	LL	11	20	-4.45	-2.55	---	-0.475
	HL	vs	LL	5	20	-.20	-2.55	---	-0.578
	HL	vs	ML	5	11	-.20	-4.45	21.5	---
CS Matches	LH	vs	HH	2	18	-16.00	-3.33	7.50	---
	HH	vs	MH	18	11	-3.33	-2.36	98.0	---
	LH	vs	MH	2	11	-16.00	-2.36	3.00	---
	LM	vs	MM	6	17	3.83	2.00	41.5	---
	LM	vs	HM	6	41	3.83	-.26	---	-1.231
	HM	vs	MM	41	17	-.26	2.00	---	-0.830
	LL	vs	ML	3	11	1.33	-.18	14.0	---
	LL	vs	HL	3	13	1.33	-5.00	13.0	---
	HL	vs	ML	13	11	-5.00	-.18	51.0	---

APPENDIX TABLE F

STs' CHANGE IN TPI SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO TPI SCORES

	Matched by TPI, and compared			N of Group		Mean TPI Change		U or z Statistic	
	1	vs	2	1	2	1	2	U	z
CT Matches	HH	vs	LH*	7	12	4.85	-12.41	18.5	---
	HH	vs	MH*	7	14	4.85	-5.78	27.0	---
	MH	vs	LH	14	12	-5.78	-12.41	66.0	---
	MM	vs	LM	36	39	-.33	-2.30	---	-0.626
	HM	vs	LM	11	39	.27	-2.30	---	-0.469
	HM	vs	MM	11	36	.27	-.33	---	-0.038
	ML	vs	LL	11	20	8.00	5.20	---	-0.890
	HL	vs	LL	5	20	-2.40	5.20	---	-0.853
	HL	vs	ML	5	11	-2.40	8.00	17.0	---
CS Matches	LH	vs	HH	2	17	9.50	-7.47	5.00	---
	HH	vs	MH	17	11	-7.47	-7.63	85.0	---
	LH	vs	MH	2	11	9.50	-7.63	6.00	---
	LM	vs	MM	6	17	-.50	1.05	46.5	---
	LM	vs	HM	6	41	-.50	.19	123.0	---
	HM	vs	MM	41	17	.19	1.05	---	-0.376
	LL	vs	ML	3	11	12.66	4.18	8.00	---
	LL	vs	HL	3	12	12.66	3.16	11.0	---
	HL	vs	ML	12	11	3.16	4.18	65.0	---

APPENDIX TABLE G

STs' CHANGE IN D SCALE SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO TPI SCORES

	Matched by TPI, and compared			N of Group		Mean D Change		U or z Statistic	
	1	vs	2	1	2	1	2	U	z
CT Matches	HH	vs	LH	7	12	3.28	1.91	37.0	---
	HH	vs	MH	7	14	3.28	5.00	48.0	---
	MH	vs	LH	14	12	5.00	1.91	---	---
	MM	vs	LM	36	39	-.08	-.28	---	-0.292
	HM	vs	LM*	11	39	11.90	-.28	---	-1.594
	HM	vs	MM*	11	36	11.90	-.08	---	-1.974
	ML	vs	LL	11	20	.72	-2.75	---	-0.103
	HL	vs	LL	5	20	-1.20	-2.75	---	-0.408
	HL	vs	ML	5	11	-1.20	.72	20.0	---
CS Matches	LH	vs	HH	2	18	-3.50	1.66	12.0	---
	HH	vs	MH*	18	11	1.66	9.09	60.5	---
	LH	vs	MH	2	11	-3.50	9.09	6.00	---
	LM	vs	MM	6	17	8.66	.41	38.5	---
	LM	vs	HM	6	41	8.66	1.21	---	-0.527
	HM	vs	MM	41	17	1.21	.41	---	-0.043
	LL	vs	ML	3	11	4.66	-4.36	10.0	---
	LL	vs	HL	3	13	4.66	-.30	14.0	---
	HL	vs	ML	13	11	-.30	-4.36	62.5	---

APPENDIX TABLE H

STs' SI SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO TPI SCORES

	Matched by TPI, and compared			N of Group		Mean SI Score		U or _z_ Statistic	
	1	vs	2	1	2	1	2	U	_z_
CT Matches	HH	vs	LH*	7	12	21.85	26.25	18.5	---
	HH	vs	MH	7	13	21.85	22.23	43.5	---
	MH	vs	LH*	13	12	22.23	26.25	44.0	---
	MM	vs	LM	34	39	25.44	25.58	---	-0.489
	HM	vs	LM	11	39	25.18	25.58	---	-0.059
	HM	vs	MM	11	34	25.18	25.44	---	-0.080
	ML	vs	LL	11	19	26.36	26.36	95.0	---
	HL	vs	LL	5	19	25.00	26.36	29.0	---
	HL	vs	ML	5	11	25.00	26.36	18.0	---
CS Matches	LH	vs	HH	2	17	24.00	22.35	15.0	---
	HH	vs	MH	17	11	22.35	23.81	86.0	---
	LH	vs	MH	2	11	24.00	23.81	11.0	---
	LM	vs	MM	6	17	28.00	26.05	32.0	---
	LM	vs	HM	6	40	28.00	24.82	---	-0.952
	HM	vs	MM	40	17	24.82	26.05	340.0	---
	LL	vs	ML*	3	11	23.00	26.90	5.5	---
	LL	vs	HL	3	12	23.00	25.08	10.5	---
	HL	vs	ML	12	11	25.08	26.90	63.0	---

APPENDIX TABLE I

STs' CHANGE IN PBI SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO D SCALE SCORE

	Matched by D, and compared			N of Group		Mean PBI Change		U or *z* Statistic	
	1	vs	2	1	2	1	2	U	*z*
CT Matches	LH	vs	HH	7	8	2.28	1.75	27.5	---
	HH	vs	MH	8	16	1.75	-.62	59.0	---
	MH	vs	LH	16	7	-.62	2.28	47.5	---
	MM	vs	LM	33	25	-5.27	-5.60	---	-0.094
	HM	vs	LM	15	25	-1.66	-5.60	---	-1.177
	HM	vs	MM	15	33	-1.66	-5.27	---	-1.270
	ML	vs	LL	29	18	-.24	.11	---	-0.044
	HL	vs	LL	15	18	-3.13	.11	105.5	---
	HL	vs	ML	15	29	-3.13	-.24	---	-0.904
CS Matches	HH	vs	HH	5	14	1.20	-3.42	24.5	---
	HH	vs	MH	14	5	-3.42	-.80	25.5	---
	LH	vs	MH	5	5	1.20	-.80	12.0	---
	LM	vs	MM	10	17	-7.20	-3.35	59.5	---
	LM	vs	HM	10	33	-7.20	-2.93	---	-1.137
	HM	vs	MM	33	17	-2.93	-3.35	---	-0.379
	LL	vs	ML	7	14	-2.00	3.21	39.0	---
	LL	vs	HL	7	26	-2.00	-3.50	---	-0.198
	HL	vs	ML*	26	14	-3.50	3.21	---	-1.817

APPENDIX TABLE J

STs' CHANGE IN TPI SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO D SCALE SCORE

	Matched by D, and compared			N of Group		Mean TPI Change		U or z Statistic	
	1	vs	2	1	2	1	2	U	z
CT Matches	LH	vs	HH	7	8	.71	8.25	20.0	---
	HH	vs	MH*	8	16	8.25	-8.62	14.5	---
	MH	vs	LH	16	7	-8.62	.71	41.0	---
	MM	vs	LM	33	25	-1.30	.72	---	-0.597
	HM	vs	LM	15	25	-.60	.72	---	-0.098
	HM	vs	MM	15	33	-.60	-1.30	---	-0.423
	ML	vs	LL	29	18	-1.41	1.88	---	-0.526
	HL	vs	LL	15	18	-1.66	1.88	120.5	---
	HL	vs	ML	15	29	-1.66	-1.41	---	-0.186
CS Matches	LH	vs	HH	5	14	-3.00	-4.64	34.5	---
	HH	vs	MH	14	5	-4.64	3.00	27.0	---
	LH	vs	MH	5	5	-3.00	3.00	10.0	---
	LM	vs	MM	10	17	-3.60	1.29	70.5	---
	LM	vs	HM	10	33	-3.60	.39	---	-0.835
	HM	vs	MM	33	17	.39	1.29	---	-0.154
	LL	vs	ML	7	14	-1.00	.71	47.5	---
	LL	vs	HL	7	26	-1.00	-1.50	---	-0.088
	HL	vs	ML	26	14	-1.50	.71	---	-0.128

APPENDIX TABLE K

STs' CHANGE IN D SCALE SCORE WHEN PAIRED WITH CTs OR CSs ACCORDING TO D SCALE SCORE

	Matched by D, and compared			N of Group		Mean D Change		U or _z_ Statistic	
	1	vs	2	1	2	1	2	U	_z_
CT Matches	LH	vs	HH	7	8	1.00	7.50	26.5	---
	HH	vs	MH*	8	16	7.50	-12.31	14.5	---
	MH	vs	LH	16	7	-12.31	1.00	36.0	---
	MM	vs	LM	33	25	-.60	-.04	---	-0.723
	HM	vs	LM	15	25	2.13	-.04	---	-0.168
	HM	vs	MM	15	33	2.13	-.60	---	-0.501
	ML	vs	LL	29	18	3.82	5.50	---	-0.186
	HL	vs	LL	15	18	7.93	5.50	124.5	---
	HL	vs	ML	15	29	7.93	3.82	---	-0.582
CS Matches	LH	vs	HH	5	14	-3.40	-6.71	32.5	---
	HH	vs	MH	14	5	-6.71	-3.00	28.0	---
	LH	vs	MH	5	5	-3.40	-3.00	10.5	---
	LM	vs	MM	10	17	3.80	2.29	71.0	---
	LM	vs	HM	10	33	3.80	1.57	---	-0.922
	HM	vs	MM	33	17	1.57	2.29	---	-0.021
	LL	vs	ML	7	14	3.42	13.07	28.5	---
	LL	vs	ML	7	26	3.42	4.00	---	-0.309
	HL	vs	ML*	26	14	4.00	13.07	---	-1.703

APPENDIX TABLE L

STs' SI SCORE WHEN MATCHED WITH CTs OR CSs ACCORDING TO D SCALE SCORE

	Matched by D, and compared			N of Group		Mean SI Score		U or z Statistic	
	1	vs	2	1	2	1	2	U	z
CT. Matches	LH	vs	HH	7	8	22.28	24.12	22.0	---
	HH	vs	MH	8	16	24.12	27.00	46.5	---
	MH	vs	LH*	16	7	27.00	22.28	23.5	---
	MM	vs	LM	32	25	24.56	25.48	---	-0.403
	HM	vs	LM	14	25	27.50	25.48	---	-0.972
	HM	vs	MM	14	32	27.50	24.56	---	-1.234
	ML	vs	LL	29	18	25.75	25.22	261.0	---
	HL	vs	LL	15	18	26.00	25.22	120.5	---
	HL	vs	ML	15	29	26.00	25.75	---	-0.499
CS Matches	LH	vs	HH*	5	14	28.00	22.50	21.0	---
	HH	vs	MH	14	5	22.50	26.20	25.5	---
	LH	vs	MH	5	5	28.00	26.20	12.0	---
	LM	vs	MM	10	17	24.40	25.94	68.0	---
	LM	vs	HM	10	31	24.40	24.29	---	-0.472
	HM	vs	MM	31	17	24.29	25.94	---	-0.011
	LL	vs	ML	7	14	27.85	24.21	29.5	---
	LL	vs	HL	7	26	27.85	26.26	---	-1.156
	HL	vs	ML	26	14	26.26	24.21	---	-0.827

APPENDIX D--OPERATIONAL DEFINITIONS OF CATEGORIES

	Low	Medium	High
I. PBI			
	137 or less	141-153	159 or greater
II. TPI			
	166 or less	171-189	196 or greater
III. D Scale			
	144 or less	148-166	172 or greater

These definitions were determined by ranking the approximately 720 scores for each test (PBI, TPI, D Scale); then, for the Lows (L's), taking all cases falling on or below the score of the 22.5th percentile of cases, for the Mediums (M's) taking all cases occurring on or between the scores of the 27.5th percentile of cases, and the 72.5th percentile of cases, and for the Highs (H's) taking all cases falling on or above the score of the 77.5th percentile of cases.

Thus each category is mutually exclusive, and each category is separated from the next higher or lower by the score range of approximately five percent of the population at that point in the distribution.

It should be noted that the population in this case is all the scores of 181 STs, CTs, and CSs, combined.

APPENDIX E--RAW DATA

The data listed below are sufficient for checks on the computations reported in this document. Each line represents a ST-CT-CS trio. Data cards into which all this information is punched, and which are satisfactory for use in standard data processing equipment, are available from the investigator.

The trios could be arranged by a number of ways; the listing below is by magnitude of change in PBI.

Each digit in column two, grade level, was collapsed to one of two categories (primary: 1-3 or intermediate: 4-6) before its use in the multiple regression analyses.

Code

Column one indicates institution, as follows:

1 - Florida Southern College
2 - The University of South Florida
3 - The University of Miami
6 - The University of Florida.

Column two indicates by numbers, 1-6, the grade level.

Columns 3-5 indicate the sex of STs, CTs, and CSs, respectively, with "2" representing female and "1" representing male.

Columns 6-8 provide the PBI scores of STs, CTs, and CSs, respectively.

Column nine provides the student teachers' gains and losses in PBI over internship.

Columns 10-12 provide the TPI scores of STs, CTs, and CSs, respectively.

Column thirteen provides the STs' losses and gains in TPI over internship.

Columns 14-16 provide the D Scale scores of STs, CTs, and CSs, respectively.

Column seventeen provides the STs' gains and losses in D Scale.

Column eighteen provides the STs' SI scores.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2	2	2	2	2	171	140	--	-37	198	181	--	-13	159	162	--	-4	18
2	3	2	2	2	154	104	150	-28	168	194	162	16	160	156	172	10	29
6	1	2	2	2	161	136	182	-26	169	164	207	22	152	102	184	9	17
6	1	2	2	2	176	--	--	-26	172	184	--	20	167	162	--	8	31
3	4	2	2	2	161	159	109	-25	186	181	170	-47	159	182	157	0	28
3	6	2	2	2	178	140	168	-25	196	193	233	15	184	176	195	5	13
3	5	2	2	2	174	174	109	-24	152	178	170	14	164	140	157	-15	29
3	2	2	2	1	170	131	173	-23	191	190	200	4	152	168	145	0	19
2	4	2	2	2	147	114	150	-23	196	198	162	8	140	157	172	-3	22
2	1	2	2	1	181	123	150	-23	156	162	195	7	171	123	198	-33	25
6	3	2	2	1	186	126	137	-22	190	158	197	30	163	124	173	2	25
3	2	2	2	2	168	144	109	-22	169	155	170	-5	167	175	157	-22	25
3	1	2	2	2	136	128	189	-22	158	155	199	19	119	162	193	12	29
3	2	2	2	2	126	146	--	-22	173	184	--	-37	152	175	--	-38	32
6	6	2	2	2	159	131	150	-21	201	155	200	4	153	161	149	-1	24
1	1	2	2	2	168	142	144	-21	160	155	188	6	163	154	142	-10	28
2	4	2	2	1	172	149	181	-20	192	159	171	-22	162	164	146	4	23
3	1	2	2	2	164	133	154	-19	179	153	176	-31	149	141	168	-48	19
3	4	2	2	2	142	144	147	-19	169	173	219	-2	133	195	173	3	31
6	1	2	2	2	159	148	--	-18	165	173	--	7	150	171	--	-5	23
3	4	2	2	2	129	175	189	-17	151	198	199	-23	149	164	193	-23	19
3	5	1	1	2	162	136	189	-17	172	213	199	-7	140	183	193	7	27
3	6	2	2	2	158	139	147	-17	196	175	219	-15	135	156	173	-11	28
1	1	2	2	2	159	149	144	-17	208	195	188	-16	188	161	142	-13	30
6	6	2	2	1	167	151	152	-16	201	183	180	-16	164	150	177	10	18
6	1	2	2	2	169	150	150	-16	166	176	200	16	140	181	149	39	13

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
3	6	1	2	2	147	162	109	-16	171	165	170	-28	177	136	157	-38	27
3	4	2	2	2	158	107	176	-16	168	201	192	-32	140	194	183	-23	32
3	2	2	2	2	149	195	109	-15	182	162	170	-22	161	169	157	0	30
3	1	2	2	2	175	138	189	-14	158	157	199	6	158	125	193	-5	23
3	2	2	2	1	165	171	173	-15	202	209	200	-5	153	157	145	9	31
6	4	2	2	1	163	134	152	-14	190	155	180	-14	169	162	177	-2	18
6	2	2	2	2	143	108	150	-14	169	183	200	1	118	160	149	18	31
3	2	2	2	2	157	170	176	-14	171	180	192	-5	135	159	183	-29	14
6	5	2	2	2	140	145	--	-13	191	172	—	-40	178	151	--	-38	28
3	4	2	2	2	163	143	109	-13	183	166	170	-20	160	164	157	13	17
1	1	2	2	2	152	140	144	-13	200	157	188	-27	145	172	142	-07	30
6	1	2	2	2	143	140	154	-12	177	162	197	1	143	162	148	5	25
6	5	2	2	2	152	141	150	-12	179	172	200	28	145	121	149	2	24
2	1	2	2	2	164	137	—	-12	179	164	--	-12	165	132	--	11	32
6	1	2	2	2	149	138	—	-11	186	191	—	-10	154	130	--	1	30
6	4	2	2	1	147	162	137	-11	196	220	197	10	145	136	173	8	22
3	2	2	2	2	177	177	109	-11	174	206	170	2	139	164	157	11	29
2	2	2	2	1	161	120	150	-11	169	180	195	-12	162	153	198	1	32
1	2	2	2	2	147	146	144	-11	170	171	188	-6	140	152	142	7	28
6	6	2	2	1	151	126	165	-10	203	162	200	-21	144	127	147	-9	25
3	3	2	2	2	144	120	189	-10	176	178	199	-17	174	159	193	28	14
3	6	2	2	1	174	143	173	-10	183	169	200	-9	164	161	145	-34	16
3	5	2	2	2	143	125	—	-10	190	179	--	-6	166	166	--	-2	26
2	2	2	2	1	169	101	124	-10	176	221	151	8	160	141	146	-2	20
6	1	2	2	2	186	147	186	-9	198	171	221	-1	167	119	165	2	--
3	3	2	2	2	188	176	195	-9	164	183	196	20	153	193	179	13	27

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
3	4	1	2	2	147	146	--	-9	190	200	--	-15	154	116	--	-53	32
2	5	2	2	1	158	157	150	-9	202	212	195	-5	162	198	198	1	24
2	1	2	2	1	164	138	124	-9	204	155	151	11	176	174	146	-4	26
6	5	2	2	2	156	117	182	-8	184	169	207	9	154	156	184	-6	24
6	6	1	2	1	140	144	207	-8	183	167	218	-10	145	175	192	14	27
3	1	2	2	2	151	133	109	-8	162	170	170	-18	168	141	157	-11	32
3	4	2	1	2	143	108	189	-8	181	145	199	-19	189	157	193	-34	27
2	4	2	2	2	123	121	--	-8	200	137	--	1	137	128	--	8	29
2	1	2	2	1	147	128	162	-8	185	176	188	-7	161	160	180	-18	27
2	2	2	2	1	152	138	166	-8	178	153	233	-5	156	154	187	0	30
2	3	2	2	1	131	132	222	-8	178	168	216	-5	158	160	208	-9	31
3	1	2	2	2	149	130	189	-7	175	168	199	-12	163	143	193	-15	14
3	2	2	2	2	157	159	--	-7	201	196	--	8	154	117	--	-8	22
3	2	2	2	2	126	130	--	-7	185	168	--	6	132	130	--	-3	29
2	1	2	2	1	138	133	222	-7	170	168	216	-9	169	159	208	5	30
1	6	2	2	2	158	120	144	-7	191	153	188	10	159	173	142	4	31
1	1	2	2	2	151	170	144	-7	192	198	188	-8	154	145	142	15	25
6	1	2	2	1	151	153	152	-6	201	160	180	-1	138	173	177	23	30
6	6	2	2	2	131	156	154	-6	160	163	197	13	150	147	148	10	30
3	1	2	2	2	151	108	189	-6	178	165	199	-17	169	123	193	-27	23
3	5	1	2	2	159	143	189	-6	176	159	199	-6	174	156	193	-34	32
3	3	2	2	2	152	150	154	-6	121	184	176	3	181	157	168	-9	28
3	4	2	2	2	157	126	154	-6	178	149	176	-6	162	147	168	6	25
3	2	2	2	2	155	147	168	-6	174	163	233	9	133	140	195	2	17
3	1	2	2	2	132	142	--	-6	188	194	--	-13	162	153	--	13	23

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1	2	2	2	130	148	144	-6	185	179	188	-8	172	153	142	-12	26
6	1	2	2	2	168	118	186	-5	179	162	221	21	188	148	165	9	31
6	1	2	2	2	140	145	154	-5	171	162	197	2	152	132	148	1	32
6	5	2	2	1	166	148	165	-5	192	156	200	12	168	158	147	17	28
6	3	2	2	1	135	122	207	-5	209	177	218	-7	166	170	192	3	11
3	5	2	2	2	154	133	109	-5	143	164	170	12	143	155	157	5	30
2	5	2	1	2	139	136	158	-5	182	179	175	8	167	147	160	-9	31
1	1	2	2	2	126	125	144	-5	145	187	188	18	128	161	142	-5	30
1	6	2	1	2	140	137	144	-5	200	135	188	-23	164	151	142	11	24
1	1	2	2	2	169	146	144	-5	199	202	188	13	141	173	142	5	15
6	4	2	2	1	144	139	165	-4	183	134	200	-9	148	155	147	12	27
6	5	2	2	2	149	191	150	-4	177	228	200	-2	162	201	149	-1	26
6	6	2	2	1	167	169	207	-4	201	166	218	-16	183	166	192	-13	29
3	2	2	2	2	158	130	195	-4	175	162	196	2	174	128	179	-23	14
3	2	2	2	2	154	140	176	-4	188	182	192	7	148	137	183	1	11
3	3	2	2	2	170	121	168	-4	192	178	233	-8	189	162	195	14	25
2	3	2	2	1	120	126	150	-4	184	172	195	-23	154	124	198	-29	20
2	3	2	2	1	135	126	181	-4	175	175	171	25	168	128	146	-12	31
1	3	2	2	2	134	120	144	-4	161	146	188	-2	145	177	142	-2	30
6	6	2	1	1	147	140	165	-3	195	166	200	9	153	153	147	5	25
6	4	2	2	1	153	165	207	-3	190	171	218	-5	173	168	192	-4	21
3	4	2	2	2	168	126	--	-3	165	168	--	-13	192	146	--	-7	32
2	3	2	2	1	151	160	162	-3	159	159	188	3	164	165	180	-9	27

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2	3	2	2	1	140	139	150	-3	160	167	195	6	141	135	198	3	30
6	6	2	2	2	144	121	154	-2	180	200	197	-4	163	130	148	2	31
3	5	2	2	2	136	159	--	-2	134	201	--	7	144	158	--	-2	24
3	5	1	2	2	150	169	140	-2	168	177	161	-12	162	160	157	-33	29
3	1	2	2	2	159	169	168	-2	167	163	233	11	144	172	195	-6	24
2	3	2	2	2	152	140	150	-2	173	182	162	1	144	154	172	28	29
2	3	2	2	1	158	130	124	-2	170	151	151	-11	142	140	146	8	24
6	4	2	2	1	124	145	207	-1	155	164	218	6	120	165	192	10	29
6	3	2	2	1	183	143	137	-1	185	198	197	13	161	163	173	8	2
3	4	2	2	2	146	132	195	-1	175	149	196	-15	137	144	179	-7	32
1	2	2	2	2	150	139	144	-1	159	161	188	-7	146	140	142	-2	22
1	1	2	2	2	152	129	144	-1	180	132	188	4	156	132	142	13	27
3	3	2	2	2	149	132	140	0	149	139	161	17	147	143	157	1	27
2	5	1	1	1	148	145	150	0	179	178	195	6	173	170	198	8	31
2	4	2	2	1	134	127	124	0	150	170	151	16	142	166	146	-4	26
6	2	2	2	2	154	129	150	0	201	167	200	5	161	135	149	26	25
1	2	2	2	2	135	112	144	0	192	142	188	-31	160	140	142	20	24
1	1	2	2	2	165	117	144	0	182	159	188	-22	168	149	142	2	31
3	4	2	2	2	132	153	--	0	147	154	--	15	127	182	--	3	30
3	4	2	2	1	149	121	173	1	158	158	200	-11	147	147	145	-13	10
6	3	2	2	2	152	154	154	1	166	200	197	-14	145	134	148	4	29
2	1	2	2	1	151	149	181	1	195	178	171	1	171	138	146	1	25

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
6	2	2	2	1	177	136	152	1	200	180	180	14	163	165	177	10	29
3	1	2	2	2	168	142	--	1	182	166	--	-14	138	133	--	10	21
6	1	2	2	2	158	153	154	2	210	200	197	5	180	183	148	11	17
6	5	1	2	2	159	148	154	2	189	171	197	2	180	151	148	-24	27
6	2	2	2	2	142	144	154	2	167	203	197	2	148	184	148	11	30
6	2	2	2	2	146	161	186	2	199	177	221	16	152	138	165	15	31
6	1	2	2	2	152	137	150	2	174	171	200	-8	159	169	149	1	27
1	4	2	2	2	147	131	144	2	173	143	188	3	171	155	142	-19	26
6	1	2	2	1	146	134	152	2	203	175	180	-23	190	168	177	-5	19
2	1	2	2	1	140	136	166	2	165	180	233	-1	171	162	187	-9	31
3	4	2	2	2	141	131	195	2	156	181	196	5	164	151	179	-3	32
3	5	2	2	2	141	151	189	3	169	170	199	-7	178	147	193	-22	13
6	6	2	2	1	157	123	207	3	201	182	218	1	192	132	192	9	19
6	4	2	2	1	155	145	207	3	189	193	218	13	161	150	192	17	26
3	2	2	2	2	140	139	109	3	175	186	170	-33	148	141	157	-16	29
2	2	2	2	1	126	149	222	3	155	159	216	2	172	171	208	-25	29
2	3	2	2	1	151	152	222	3	169	206	216	9	147	157	208	16	20
6	3	2	2	1	144	167	152	3	193	163	180	7	149	158	177	16	31
6	1	2	2	1	130	140	152	3	183	139	180	1	133	164	177	27	28
2	1	2	2	2	166	138	158	3	206	158	175	-13	172	143	160	12	24
2	1	2	2	1	135	124	166	3	175	143	233	10	159	--	187	0	32

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
3	4	2	2	2	154	125	140	4	151	166	161	5	104	153	157	17	16
2	1	2	2	2	168	112	--	4	166	166	--	-7	146	146	--	10	31
3	1	2	2	2	133	144	154	4	153	182	176	-9	138	157	168	9	18
3	1	2	2	2	122	156	189	4	171	177	199	-2	146	175	193	10	31
2	5	2	2	1	147	136	181	4	170	205	171	-15	158	167	146	-1	20
2	5	2	2	1	141	138	124	4	193	125	151	-6	169	157	146	12	23
6	3	2	2	2	132	97	186	4	164	194	221	18	118	145	165	7	30
6	2	2	2	2	144	112	150	4	199	172	200	-21	164	170	149	-10	20
1	2	2	2	2	144	104	144	4	181	188	188	0	181	172	142	-2	29
2	5	2	2	2	154	97	158	4	180	146	175	12	171	164	160	9	20
2	1	2	2	2	161	186	158	4	165	196	175	6	159	174	160	2	27
2	5	2	1	1	147	151	--	5	176	190	--	8	164	145	--	6	32
2	1	2	2	1	144	139	150	5	181	199	195	-19	159	193	198	10	32
2	2	2	2	1	152	126	150	5	178	161	195	-5	158	173	198	-9	31
2	4	2	2	1	136	137	150	5	180	172	195	-1	139	155	198	-2	30
2	3	2	2	1	149	154	150	5	195	193	195	10	176	176	198	2	29
6	4	2	2	2	165	145	150	5	169	190	200	44	153	175	149	0	25
6	6	2	2	2	151	144	--	5	199	158	--	13	180	173	--	19	31
2	2	2	2	1	163	137	166	5	212	173	233	-4	166	156	187	0	26
6	5	2	2	2	132	141	182	5	179	165	207	9	170	148	184	1	32
2	3	2	2	1	145	138	150	6	183	181	195	-12	139	164	198	-13	30

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
3	4	2	2	2	125	135	189	6	221	158	199	-55	144	151	193	-8	31
6	3	2	2	1	131	135	207	6	177	172	218	-34	163	176	192	14	
6	5	2	2	1	123	145	207	6	175	185	218	2	139	151	192	2	29
6	6	2	2	2	167	134	186	6	185	163	221	32	185	135	165	14	18
6	3	2	2	2	157	166	186	6	182	209	221	1	166	183	165	5	27
6	2	2	2	2	137	105	186	6	168	179	221	-8	137	140	165	22	31
2	4	2	2	2	147	155	--	6	182	173	--	0	161	118	--	-8	24
6	6	2	2	2	155	144	150	6	182	171	200	0	139	119	149	14	29
6	1	2	2	2	140	185	150	6	188	189	200	21	165	182	149	24	25
6	6	2	2	2	132	160	--	6	175	176	--	-3	149	156	--	5	15
2	6	2	1	2	155	156	150	6	178	163	162	-4	165	143	172	14	31
3	5	2	2	2	170	152	154	7	188	162	176	-8	174	175	168	5	26
3	3	2	2	2	145	131	154	7	152	140	176	12	142	150	168	9	27
2	4	2	2	1	155	151	124	7	180	131	151	-3	190	164	146	-11	30
6	4	2	2	2	141	126	--	7	173	176	--	24	150	136	--	13	28
1	3	2	2	2	138	145	144	7	175	140	188	17	180	135	142	24	29
3	3	2	2	2	152	117	195	7	168	177	196	15	150	114	179	24	29
3	5	2	1	1	191	149	--	8	179	161	--	-14	183	151	--	-4	21
3	5	2	2	2	154	143	140	8	186	150	161	3	195	153	157	-12	31
2	2	2	2	2	115	126	--	8	187	171	--	-10	127	152	--	-20	19
6	2	2	2	1	141	153	207	8	193	161	218	8	143	169	192	15	19

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
6	2	2	2	1	146	125	207	8	176	155	218	6	164	138	192	10	15
3	3	2	2	2	128	127	--	9	172	218	--	19	145	188	--	24	27
6	1	2	2	1	155	169	207	9	181	179	218	7	154	182	192	7	25
3	2	1	1	1	148	152	--	9	175	173	--	-7	148	199	--	14	28
3	2	2	2	2	129	140	109	9	153	151	170	-7	134	153	157	-8	28
6	4	2	2	2	121	122	154	10	187	168	197	15	134	146	148	5	24
6	5	2	2	2	164	138	--	10	186	153	--	16	145	126	--	-3	23
3	5	2	1	1	118	144	--	10	154	147	--	3	174	164	--	-11	30
1	2	2	2	2	132	145	144	10	158	176	188	9	141	143	142	3	31
3	2	3	3	3	139	149	--	11	154	185	--	6	211	160	--	-10	28
6	6	2	2	1	163	151	152	11	193	179	180	-1	134	150	177	9	17
6	1	2	2	2	132	136	150	12	180	172	200	-5	136	136	149	-1	10
6	4	2	2	2	148	136	--	12	182	150	--	14	154	150	--	14	14
6	2	2	2	1	137	114	152	12	209	173	180	19	137	120	177	31	18
6	4	2	2	1	120	142	137	12	165	159	197	12	167	122	173	-14	
6	1	2	2	1	152	155	165	13	195	171	200	6	155	156	147	0	23
2	1	2	2	1	120	147	181	13	166	168	171	7	162	166	146	-34	28
3	1	2	2	2	129	121	109	13	156	204	170	12	153	163	157	13	26
3	3	2	2	1	139	149	173	14	172	159	200	-12	137	160	145	23	31
2	2	2	2	2	123	154	158	14	173	170	175	-6	133	165	160	7	27
2	6	2	2	2	147	151	150	14	185	199	162	-8	168	188	172	35	27

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
6	1	2	2	2	165	118	--	14	173	175	--	37	170	132	--	25	27
3	3	2	2	2	152	141	--	16	189	176	--	19	176	167	--	-5	32
6	4	2	2	1	123	149	207	16	175	167	218	-1	132	176	192	5	28
6	2	2	2	2	131	172	150	16	203	188	200	-17	136	174	149	2	16
6	4	2	2	2	151	146	154	17	192	194	197	-2	144	164	148	-6	17
3	2	2	2	2	142	108	168	17	187	157	233	4	170	138	195	23	32
1	2	2	2	2	126	135	144	17	175	151	188	16	152	147	142	10	19
3	3	2	2		158	126	--	17	190	152	--	-6	178	125	--	9	25
3	3	2	2	1	164	155	173	18	191	170	200	-8	177	154	145	-14	26
3	4	2	2	2	132	164	109	18	173	201	170	0	130	180	157	32	30
2	5	2	2	2	149	157	158	18	208	188	175	-11	130	156	160	23	25
2	6	2	1	1	158	146	166	19	211	166	233	-22	166	148	187	-8	12
3	1	2	2	2	178	149	154	25	186	186	176	20	173	186	168	24	22
2	2	2	2	1	142	122	150	26	186	173	195	20	163	149	198	7	

APPENDIX F--"FINDINGS" JUDGED TO BE TYPE I ERRORS

1. STs medium in PBI became less experimental in philosophic beliefs when their CTs were in the high PBI category but showed no change when their CTs were in the low PBI category. (From item 1, Table H.)

2. STs medium in PBI became less experimental in philosophic beliefs when their CSs were in the low PBI category but registered no change when their CSs were in the high PBI category. (2, Table H.)

3. STs in the highly open category who were placed with CTs equally high gained in TPI, while other highly open STs who were placed with CTs in the medium D Scale category lost TPI. (From item 3, Table H.)

4. STs medium in TPI gained in openmindedness interning with CTs high in TPI, but registered no change interning with CTs in the medium TPI classification. (From item 4, Table H.)

5. CTs who were high in PBI seemed to influence high PBI STs to be more satisfied with internship than CTs who were medium in PBI. (From item 7, Table H.)

6. CSs who were medium in PBI seemed to cause medium PBI STs to be more satisfied with internship than CSs who were high in PBI. (From item 8, Table H.)

7. Over the internship period highly open STs had a mild tendency to resist their CTs' PBI positions, while highly closed STs had a strong tendency to gravitate toward their CTs' PBI positions relative to their own. (From item 10, Table J.)

8. Over the internship period, STs high in PBI tended strongly to change in TPI inversely as their CSs were higher or lower in PBI than they, while STs quite low on PBI tended moderately to change in TPI directly as their CSs were higher or lower in PBI than they. (Item 16, Table K.)

BIOGRAPHICAL SKETCH

Allen Page Hayes was born January 14, 1933 at Centreville, Alabama. He attended public schools in Bay Minette, Alabama, and was graduated from Baldwin County High School in May, 1951. In June, 1955, he received the degree of Bachelor of Science with a major in Elementary Education from the University of Alabama. From 1955 until 1958 he served in the United States Air Force as a pilot trainee and as a junior officer in Texas, Kansas, and Georgia.

For the five years following his discharge from the Air Force he was a classroom teacher and a cooperating teacher at Verner Elementary School, Tuscaloosa, Alabama. During this period he also did graduate work at the University of Alabama, receiving the degree of Master of Science in 1960. He was a fellow in the Summer Institute for Elementary Science Personnel at Teachers College, Columbia University, during the summer of 1960. In 1963 he was awarded a Graduate Council Fellowship and began work toward the degree of Doctor of Education at the University of Florida. As a temporary Instructor in the College of Education, winter trimester, 1965, he supervised student teachers in Jacksonville and Orlando, Florida. He was a teacher in P. K. Yonge Laboratory School for the 1965-66 academic year. From September, 1966, until the present time he has been Assistant Professor of Education at Auburn University, Auburn, Alabama, where he has been engaged principally in supervising elementary school interns, but also has taught methods courses in the teaching of reading and language arts.

Allen Page Hayes is married to the former Paula Sue Burnum and is the father of three boys. He is a member of Phi Delta Kappa, the Association for Supervision and Curriculum Development, the American Educational Research Association, the John Dewey Society, the Episcopal Church, and the National Society for the Study of Education.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Education and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Education.

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